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# The Effectiveness of Video Self-Modeling on Increasing and Sustaining Teacher Use of Behavior-Specific Praise in the Alternative Classroom

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# The Effectiveness of Video Self-Modeling on Increasing and Sustaining Teacher Use of Behavior-Specific Praise in the Alternative Classroom

Natalie Rose Starling, PhD

University of Connecticut, 2015

Increases in teacher use of behavior-specific praise statements (BSPS) have been associated with positive outcomes for students, including reductions in student problem behavior, improvements in student on-task behavior, and positive interactions between students and teachers. This is particularly relevant for students with behavior support needs who receive educational services in alternative settings, a population that has an increased need for such efforts. Additionally, there is a need to support the range of effective interventions available to improve as well as sustain teacher use of effective classroom management strategies, such as behavior-specific praise. Video self-modeling (VSM) has been found to produce rapid, positive, sustained behavioral changes for a wide variety of skills, including communication, social interaction, and vocational skills. Following the model of Hawkins and Heflin (2011), this study utilized a single-subject multiple baseline design to examine whether VSM would increase and sustain use of behavior-specific praise across four classroom teachers who provide educational services to students with emotional behavioral disabilities and positive behavioral support needs in an alternative setting. Although examination of relative mean changes suggested the possibility of increased use of behavior-specific praise across participants, effects were not consistent across other aspects of visual and statistical analysis (data overlap, trend, effect size) which suggest inconclusive findings. Additionally, sustained improvements

were not noted at follow-up. Study limitations and implications for research and practice are presented.

The Effectiveness of Video Self-Modeling on Increasing and Sustaining Teacher Use of  
Behavior-Specific Praise in the Alternative Classroom

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B.A., University of Connecticut, **2006**

M.S., Southern Connecticut State University, **2008**

Sixth Year Professional Diploma, Southern Connecticut State University, **2009**

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

at the

University of Connecticut

2015

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2015

APPROVAL PAGE

Doctor of Philosophy Dissertation

The Effectiveness of Video Self-Modeling on Increasing and Sustaining Teacher Use of  
Behavior-Specific Praise in the Alternative Classroom

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## **Chapter I: Introduction**

### **Statement of the Problem**

Teacher praise is recommended as an effective universal strategy towards increasing student academic achievement and positive behavior in the classroom setting (Cherne, 2009; Henley, 2010; Kerr & Nelson, 2010; Lee & Axelrod, 2005; Sugai, 2007; Wheeler & Richey, 2010). *Behavior-specific praise* (BSP) is recommended as the most effective form of praise (Brophy, 1981; Chalk & Bizo, 2004; Hawkins & Heflin, 2011; Rhode, Jenson, & Reavis, 1993; Sutherland & Wehby, 2001). Research findings have demonstrated a positive relationship between teacher use of BSP and student appropriate behaviors, including increases in on-task behavior, reductions in off-task behavior, increases in student compliance, and decreased rates of disruptive behavior (Austin & Soeda, 2008; Fullerton, Conroy, & Correa, 2009; Gable, Hester, Rock, & Hughes, 2009; Reinke, Lewis-Palmer, & Martin, 2007; Sutherland & Wehby, 2001; Thompson, Marchant, Anderson, Prater, & Gibb, 2012). As an effective form of positive behavior feedback, praise can also help build positive relationships between teachers and students and assist in establishing supportive learning environments (Brophy, 1998; Emmer, Evertson, & Worsham, 2003; Jenson, Olympia, Farley, & Clark, 2004; Shores, Gunter, & Jack, 1993; Sutherland, Wehby, & Yoder, 2002). Despite these findings, low levels and low likelihood of teachers' use of this behavior management strategy have been reported (Beaman & Wheldall, 2000; Gunter & Shores, 1994; Shores et al., 1993; Sutherland, Wehby, & Copeland, 2000; Thomas, Presland, Grant, & Glynn, 1978; White, 1975). Students with disabilities, particularly *emotional behavioral disorders* (EBDs), receiving educational services in alternative settings in particular were found to receive low levels of praise (Gorman-Smith, 2003; Sutherland et al., 2002; Wehby, Symons, & Shores,

1995). This student population's need for appropriate positive behavioral feedback, specifically behavior-specific praise, is substantiated by the increased risk for challenging behavior that these students face (Beaman & Wheldall, 2000; Fullerton et al., 2009; Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008; Sutherland & Oswald, 2005).

Video self-modeling's (VSM) effective application to behavior that has fallen below its desired level or rate, particularly with communication issues, social interaction, parent behavior toward children, and vocational skills, as well as its demonstrated sustainability, generalizability, low intrusiveness, and user friendliness, provides encouraging support for examining VSM's effectiveness as an approach to improve teacher use of behavior-specific praise (Hawkins & Heflin, 2011). Additionally, there is a need to expand the more limited literature base regarding use of VSM with adults compared to the extensive review of VSM's application to behavioral challenges of childhood.

### **Purpose of the Study**

The purpose of this study was to evaluate the effectiveness of video self-modeling as an individualized support strategy to increase and sustain the frequency of behavior-specific praise given by teachers who deliver instruction to students with behavioral support needs in an alternative educational setting. This study extends the work of Hawkins and Heflin (2011), Myers, Simonsen, and Sugai (2011), Pisacreta, Tincani, Connell, and Axelrod (2011), Sutherland et al. (2000), and Thompson et al. (2012) by examining teacher use of an effective classroom behavior management strategy, behavior-specific praise, and furthering exploration of the impact of video self-modeling as an intervention to support the growing need for educator support, training, and

professional development (Simonsen, MacSuga-Gage, Briere, Freeman, Myers, Scott, & Sugai, 2014).



## **Chapter II: Review of the Literature**

### **Importance and Impact of Praise and Behavior-Specific Praise**

*Evidence-based interventions* (EBIs) are promoted as methods for improving student academic and behavioral outcomes (Musti-Rao & Haydon, 2011). One evidence-based intervention for reinforcing desired student behavior is teacher praise, defined as an affirmative statement delivered to a student immediately following a desired positive academic or social behavior (e.g. on-task behavior, compliance with instructions, accurate academic work) (Musti-Rao & Haydon, 2011). This simple strategy can be implemented in all types of school settings, is recommended across all levels of behavior support, from school-wide to classroom to individual student feedback, and is a core component of *Positive Behavior Interventions and Supports* (PBIS) in promoting positive outcomes for students (Moore Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Peterson Nelson, Young, Young, & Cox, 2010; Stormont, Smith, & Lewis, 2007; Sugai & Horner, 2002; Sugai & Horner, 2009; Wheatley, West, Charlton, Sanders, Smith, & Taylor, 2009). Praise provides students with feedback on the behavior targeted for improvement, provides encouragement, opportunities for building self-esteem, and promotes positive teacher student interactions (Musti-Rao & Haydon, 2011; Shores et al., 1993; Sutherland et al., 2000; Walker, Colvin, & Ramsey, 1999). Teacher praise has therefore been recommended as an effective universal strategy towards increasing student academic achievement and positive behavior in the classroom setting (Cherne, 2009; Henley, 2010; Kerr & Nelson, 2010; Lee & Axelrod, 2005; Sugai, 2007; Wheeler & Richey, 2010).

Descriptive and specific praise, also referred to as *behavior-specific praise statements* (BSPS), can be delivered in reference to student academic behavior or student

social behavior, and has been recommended as the most effective type of praise (Brophy, 1981; Chalk & Bizo, 2004; Hawkins & Heflin, 2011; Rhode et al., 1993; Sutherland & Wehby, 2001). Behavior-specific praise includes statements such as “Susan, excellent job raising your hand and waiting to be called on.” Non-examples of behavior-specific praise include praise that lacks a specific description of the desired behavior, such as “good work”, and is referred to as *non-behavior-specific praise* (Musti-Rao & Haydon, 2011) or *non-specific praise statements* (Hawkins & Heflin, 2011). In addition to being specific and descriptive, behavior-specific praise should also be delivered immediately, contingently and with sincerity (Brophy, 1998; Duncan, Kemple & Smith, 2000; Weinstein, 2003).

When praise is descriptive and specific to the student behavior targeted for reinforcement, students are given opportunities to better recognize expected behaviors and connect these behaviors with positive outcomes and experiences (Hawkins & Heflin, 2011; Jenson et al., 2004; Rhode et al., 1993; Sutherland et al., 2002). Research findings have described a positive relationship between teacher use of behavior-specific praise and student use of appropriate behaviors, including increases in on-task behavior, reductions in off-task behavior, increases in student compliance, and decreased rates of disruptive behavior (Austin & Soeda, 2008; Fullerton, et al., 2009; Gable et al., 2009; Reinke et al., 2007; Sutherland & Wehby, 2001; Thompson et al., 2012). Thompson et al. (2012) specifically examined student on-task behavior in relation to increasing teacher use of behavior-specific praise. Their findings supported findings from Sutherland et al. (2000) and suggested that increased teacher use of praise resulted in increased student on-task behavior and engagement. Furthermore, Thompson et al. (2012) found that variability in

student on-task behavior matched the variability of teacher rates of praise use, suggesting a correlation between increases in teacher use of behavior-specific praise and increases in student on-task behavior.

As a positive psychological approach, praise can also help build positive relationships between teachers and students and assist in establishing supportive learning environments (Brophy, 1998; Emmer et al., 2003; Jenson et al., 2004; Shores et al., 1993; Sutherland et al., 2002). Despite these positive findings regarding the impact of praise, low levels and low likelihood of teachers' use of praise have been reported (Beaman & Wheldall, 2000; Gunter & Shores, 1994; Shores et al., 1993; Sutherland et al., 2000; Thomas et al., 1978; White, 1975). White (1975) described natural rates of teacher approval and disapproval, and found that in 13 of 16 reviewed studies, students across all grades received more teacher disapproval than approval, especially for social behaviors. Shores et al. (1993) also reported that teachers are less likely to respond to appropriate behavior by using verbal praise (and other positive techniques) but instead are more likely to react and attend to students' inappropriate behaviors. Additionally, Gunter and Shores (1994) reported low frequency of teacher praise following student compliance. Likewise, Sutherland et al. (2000) reported that behavior-specific praise is "cited as the most effective form of praise, (yet) it makes up only a small percentage of the total amount of praise students receive" (p. 3).

The frequency of praise use may be influenced by teacher expectations of students (Van Acker, Grant, & Henry, 1996). According to Bandura (1977; 1986), expectations can be interpreted as anticipations of reinforcement based upon prior experience or prior reinforcement. McCroskey (1984), in describing a cognitive model of expectant learning

through the study of communication, detailed three types of expectations: positive expectations, negative expectations, and helplessness, which are expectations formed about one's behavior(s), the behavior of others, and circumstances (e.g. interacting with students in a classroom). The interplay between the person, behavior, and environment is important, and forms the framework for social learning theory (Bandura, 1989). This circular relationship is described by Bandura (1989, p. 1175) as "reciprocal causation..., and in this model, action, cognitive, affective, and other personal factors, and environmental events all operate as interacting determinants." Thus self-efficacy can be developed about circumstances when positive reinforcement and positive expectations continually and cyclically promote each other's existence (Bandura, 1989).

Unfortunately, the opposite also logically follows: when punishment or a lack of reinforcement is encountered, negative expectations can develop (Bandura, 1989).

Given research findings on low levels and likelihood of behavior-specific praise usage, teachers are encouraged to utilize behavior-specific praise, although a variety of recommendations exist on what proportion of feedback should be positive praise and what proportion can be negative reprimands (Gunter & Shores, 1994; Pisacreta et al., 2011; Shores et al., 1993; Sutherland et al., 2000). For promotion of appropriate student behavior, recommended ratios of teacher praise to reprimand have ranged from 3:1 (Sprick, 1981) to 10:1 (Nafpaktitis, Mayer, & Butterworth, 1985). Sugai and Horner (2002) recommended that an appropriate goal for teachers is a ratio of four to five positive interactions for every negative interaction or reprimand. More recently, Trussell (2008) also suggested an optimal praise-to-correction ratio of 4:1, while Sugai (2008) recommended an increased ratio of six to eight positive interactions for every one

negative adult-student interaction. Nonetheless, Simonsen, Fairbanks, Briesch, Myers, and Sugai (2008) noted a lack of empirical evidence to support the training of teachers to utilize a specific praise-to-behavior correction ratio.

While research on the recommended ratio of praise may continue to develop, Gable et al. (2009) reasoned that without specific training in the delivery of praise, teachers tend to overuse negative classroom management techniques, such as reprimands, and underuse positive behavior-specific praise. This finding, along with research findings documenting positive changes in student achievement and social behavior in response to teacher praise, suggested training teachers to increase their use of behavior-specific praise may still be beneficial despite a lack of consensus in the literature on an ideal pre-determined praise ratio (Cherne, 2009; Henley, 2010; Kerr & Nelson, 2010; Lee & Axelrod, 2005; Rhode et al., 1993; Sugai, 2007; Wheeler & Richey, 2010). Therefore, this study examined the training of teachers to increase their use of behavior-specific praise without reference to a particular ratio.

### **Student Population and Alternative Settings**

Riley-Tillman and Burns (2009) maintained that students for whom the regular education curriculum is not effective require additional more in-depth assessment and intervention to address their needs. Students with emotional behavioral disorders (EBD) are particularly at risk for disruptive behavior in the classroom and their need for increased support can result in placement in an alternative setting (Beaman & Wheldall, 2000; Fullerton et al., 2009; Reinke et al., 2007; Sutherland et al., 2008; Sutherland & Oswald, 2005). Therefore the need to support the use of effective classroom behavior management strategies by educators who provide services to this student population in

this setting is particularly important (Sutherland et al., 2000). The need to support teacher use of behavior-specific praise in alternative school settings is also strengthened by research findings demonstrating positive outcomes when praise and other universal behavioral management strategies of Positive Behavior Interventions and Supports (PBIS) are implemented in these settings (Friman & Jones, 1997; Simonsen, Britton, & Young, 2010; Sutherland et al., 2000). Friman and Jones (1997) documented significant decreases in behavior problems in male students in a family-style residential alternative educational setting when the ratio of positive interactions from staff to students increased. Simonsen et al. (2010) found a similar reduction in behavior incidents following the implementation of PBIS in a 3-year descriptive case study conducted in an alternative school setting. Additionally, Sutherland et al. (2000) found that when teacher use of behavior-specific praise increased, nine fifth-grade students with emotional behavioral disorders who received educational services in a self-contained classroom showed an increase in on-task behavior.

Classroom behavioral management and student behavioral and academics outcomes are all intertwined, continually impacting each other, while limitations and barriers to effective on-going teacher training and school resources to improve these factors remain present (Simonsen et al., 2014). Additionally, the growth of expectations and responsibilities of educators, and the continual behavioral support needs of students, drive the necessity for training methods that offer efficient and effective support for the implementation of positive behavior support and classroom management strategies (Simonsen et al., 2014).

## **Interventions to Address Behavior-Specific Praise**

Research has focused on increasing teacher behavior-specific praise rates with a variety of interventions with some success; however, sustaining and generalizing these praise rates once increased levels are achieved remained a common concern (Hawkins & Heflin, 2011; Landrum & Kauffman, 2006). Some examples of interventions in the literature include performance feedback, self-monitoring strategies, and modeling by others.

Performance feedback is a commonly used intervention in experimental studies to improve teacher praise (Acker & O’Leary, 1987; Andrews & Kozma, 1990; Armstrong, McNeil, & Van Houten, 1988; Cossairt, Hall, & Hopkins, 1973; Devlin-Scherer, Devlin-Scherer, Wright, Roger, & Meyers, 1997; Hall, Panyan, Rabon, & Broden, 1968; Hiralall & Martens, 1998; Lannie & McCurdy, 2007; Madsen, Becker, & Thomas, 1968; Reinke et al., 2007; Simonsen, Myers, & DeLuca, 2010; Sloat, Tharp, & Gallimore, 1977; Stormont et al., 2007; Sutherland et al., 2000; Swinson & Harrop, 2005). Performance feedback from a supervisor has also been used to explore preservice teacher attention to and praise of appropriate student behavior, particularly students with emotional behavioral disorders (Rathel, Drasgow, & Christle, 2008). Rathel et al. (2008) found that two preservice teachers increased their ratio of positive-to-negative communication to students following supervisor use of specific performance feedback. Additionally, Simonsen et al. (2010) noted that teachers demonstrated behavior change only once they received performance feedback.

In 2000, Sutherland et al. examined the impact of observation and verbal feedback from researchers on teacher rates of behavior-specific praise delivered to nine fifth-grade

students with emotional behavioral disorders in a self-contained classroom setting. Participant use of behavior-specific praise increased after participants were presented with a goal of six behavior-specific praise statements every 15 minutes and received coaching, reminders, progress data, and praise from the researchers. Despite this initial improvement, the researchers suggested that the long-term impact of the intervention may have been minimal because the increased rates of behavior-specific praise were not maintained after withdrawal of the intervention.

The application of self-monitoring strategies to increasing teacher use of praise has also been experimentally studied in the literature with some promising results, however, sustainability of these increased rates remained a common challenge (Chalk & Bizo, 2004; Horton, 1975; Kalis, Vannest, & Parker, 2007; Keller et al., 2005; Sprick, 1981; Sutherland & Wehby, 2001; Sutherland et al., 2001; Trolinder, Choi, & Proctor, 2004; Van Houten & Sullivan, 1975). Some studies included videotaped self-monitoring techniques (Gable, Hendrickson, Young, Shores, & Stowitschek, 1983; Gunter & Reed, 1996; Lago-Delello, 1998; Shores et al., 1993). Using an ABA maintenance design, Kalis et al. (2007) found increases in one teacher's use of praise in a high school classroom for students with EBD following the use of self-monitoring techniques, maintenance of these changes were assessed after the removal of the intervention for three sessions.

In addition to performance feedback and self-monitoring strategies, modeling of the desired behavior by a person (who is not the study participant), both in video and in-person format, has been examined with limited sustained changes (Horton, 1975; Houghton, Wheldall, Jukes, & Sharpe, 1990; Pisacreta et al., 2011; Slider, Noell, & Williams, 2006; Sloat et al., 1977). In 2011, Pisacreta et al. specifically examined the use



of modeling by the experimenter coupled with performance feedback, which involved the following procedure:

the experimenter modeled for teachers how and when to praise students' appropriate behavior during daily observation sessions. This consisted of the experimenter walking around each teacher's classroom and providing contingent, behavior specific verbal praise to students as they followed the classroom rules. Then, the experimenter walked to the back of the classroom and, for 20min, provided gestural and verbal prompts for teachers to give contingent, behavior-specific praise [to] [*sic*] students as they exhibited appropriate behavior.

(Pisacreta et al., 2011, p. 248)

Pisacreta et al. (2011) found increased rates of teacher praise but noted the continued use of behavior corrections by participants, as well as a lack skill generalization (lack of participant use of increased rate of praise in the non-training classroom setting), further substantiating a need to explore the application of interventions that have demonstrated sustainability of behavior change. *Video self-modeling* (VSM) has been promoted as one such intervention (Bellini & Akullian, 2007).

Video self-modeling has been promoted as an effective evidence-based intervention that has demonstrated sustainability as well as generalizability (Bellini & Akullian, 2007) and can be considered an individualized intervention (Dowrick, 1999). Exploration of the utility of VSM as an approach to address the need to increase and sustain use of an effective classroom behavior management strategy, such as teacher use of behavior-specific praise, may also help expand options for teacher support, consultation and training at the individualized level.

## **Video Self-Modeling**

Video self-modeling is based on the importance of modeling in social learning (Buggey & Ogle, 2012; Dowrick, 1999). The demonstration of behaviors through modeling is an essential component of education (Buggey & Ogle, 2012). Bandura's (1986) social cognitive theory suggested that the similarities between the characteristics of the model and the characteristics of the observer influence the strength of behavior change in the observer. Accordingly, research has revealed that individuals who function slightly above the ability of the observer but who also have many similarities with the observer, including age, personal characteristics (such as race, gender, culture, personality, etc.) tend to be the most appropriate and effective models (Dowrick, 1999; Pigott & Gonzales, 1987; Schunk & Hanson, 1989; Thoresen & Hosford, 1973). The importance of the observer's perception of his or her own similarity with the model has been emphasized in the literature as a powerful factor in observational learning which has supported the growth and use of the self as the model in video self-modeling thereby ultimately maximizing similarity between the characteristics of the model and the characteristics of the observer (Clare, Jenson, Kehle, & Bray, 2000; Dowrick, 1999; Hosford, 1981).

Self-modeling is specifically defined as behavior change that occurs as a result of repeatedly viewing oneself performing only desired behaviors through the use of edited video images (Clare et al., 2000; Dowrick, 1991). Bandura (1997) noted that the advantage of seeing oneself perform skills successfully "provides clear information on how best to perform skills" and "strengthens beliefs in one's capability" (p. 94) and in one's potential to succeed, and is a significant component of learning.

Video self-modeling (VSM) may be the most well-known form of self-modeling (Dowrick, 2012). VSM allows individuals to observe themselves performing a behavior or particular task beyond their present level of functioning (Buggey, 2012). Dowrick (2012) suggested that the targeted behavior be new (unacquired or underacquired) with the intent that this behavior will be a future behavior. VSM typically uses images captured through video recording, which is then edited into two-to four-minute video vignettes, and repeatedly shown to the observer to help the observer learn new skills, increase skill application, or modify his or her behavior to meet the demands of challenging environments (Dowrick, 1999).

**Video self-modeling techniques.** There are two primary techniques that can be used to present advanced skills in video self-modeling: *feedforward* and *positive self-review* (Dowrick, 1999). Feedforward involves editing video footage to artificially depict behavior in a particular environment, new, or challenging setting in which the behavior has yet to be acquired or demonstrated (Dowrick, 1999; Smith, Hand, & Dowrick, 2014). Positive self-review (PSR) involves filming the typical behavior of a subject then removing depictions of undesirable or inappropriate behavior, or non-examples of the target behavior through the video editing process so that the resulting video footage only illustrates positive examples of the subject's behavior (Dowrick, 1999). These positive behaviors are streamlined through the video editing process to appear errorless in the final video vignette, which is then shown to the subject (Dowrick, 1999). The subject does not view the video footage containing the undesirable behavior (Dowrick, 1999). Dowrick (1999) concluded positive self-review “appears suited to improving the rate of a

behavior that is below its desired level, whether it has not yet reached that level (newly learned) or fallen off (failed to maintain)” (p. 25).

Both feedforward and positive self-review can include scripted role-playing if the subject demonstrates a need for physical rehearsal of a positive behavior in a particular setting in advance of a challenging context or challenging circumstances (Buggey & Ogle, 2012; Dowrick, 1999; Dowrick, 2012). Video footage of the role-play can then be edited to simulate the subject displaying the desired behavior in the target setting even though the rehearsal may not have occurred in the target setting or occurred under challenging circumstances of the target setting (Dowrick, 1999). A successful case study conducted by Kehle, Owen, and Cressy (1990) utilized this rehearsal with a child with selective mutism. Their procedure involved filming the child and child’s mother practicing successful verbal exchanges (mother asking questions and the child answering) in the child’s empty classroom (after classmates had left for the day), and then on a separate occasion, the child’s teacher was filmed role-playing and asking identical questions in this setting without the child present (Kehle et al., 1990). The video footage was edited to depict the teacher and the child carrying out this exchange by removing footage of the mother’s presence in the scene and substituting this with footage of the teacher’s role-play (Kehle et al., 1990). After five sessions, in which the child viewed the edited footage (with increasing duration of the child’s time spent talking in the footage), the child spontaneously began freely talking to his teacher and classmates in the classroom (Kehle et al., 1990).

The advantages of VSM include its low level of intrusiveness, and time and cost effectiveness (Buggey, 2012). The process and ease of video-editing has been facilitated

by advances in technology, creating a more user-friendly and less time-consuming experience (Buggey & Ogle, 2012). Typically, the edited video vignettes do not exceed four minutes in duration and are shown to the observer no more than eight occasions over a period of four to six weeks (Dowrick, 1999; Bray & Kehle, 2001).

**Effectiveness of video self-modeling.** Hitchcock, Dowrick, and Prater (2003) asserted that the effects of VSM can be demonstrated immediately and dramatically. In a meta-analysis of VSM studies, Bellini and Akullian (2007) found that results in virtually all studies accelerated rapidly from baseline, were maintained at follow-up, and were generalized effectively across persons, situations, and environments. Hitchcock et al. (2003) also noted that VSM can be successfully combined with other interventions, such as verbal reinforcement or reward systems, and the social validity of VSM has been documented by families, teachers, and participants.

The most successful application of VSM targets skills or behaviors that are significant or crucial to the observer's learning, development, or adaptive functioning, as well as behaviors that have been resistant to change, previous intervention, or are necessary in a challenging context (Bray & Kehle, 2001; Dowrick, 1999; Hitchcock et al., 2003). In this present study, behavior-specific praise delivered by the classroom teacher may be considered an adaptive behavior and sustained behavior-specific praise by the teacher in an alternative educational classroom setting may be considered a challenging context.

Video self-modeling has been utilized as an effective skill-building strategy across multiple disciplines, populations, and skill areas, including internalizing disorders, emotional regulation, communication issues (selective-mutism and stuttering), social

interaction, motor skills (including athletics), and vocational skills (Ballard & Crooks, 1984; Bellini & Akullian, 2007; Bellini, Akullian, & Hopf, 2007; Bray & Kehle, 2001; Buggey, Hoomes, Sherberger, & Williams, 2009; Creer & Miklich, 1970; Dowrick, 1999; Dowrick & Raeburn, 1995; Goh & Bambara, 2013; Hitchcock et al., 2003; Kehle, Clark, Jenson, & Wampold, 1986; Kehle, Madaus, Baratta, & Bray, 1998; Nikopoulos & Keenan, 2003; Starek & McCullagh, 1999; Vertes & Ste-Marie, 2013).

When considering explanations for VSM's effectiveness, Dowrick (1999) asserted that, in addition to the acquisition of new or improved behavioral skill, VSM can also increase a person's self-efficacy; this is supported by Buggey's (2007) suggestion that videos are evidence of the observer's successful skill application. Furthermore, Kehle, Bray, Margiano, Theodore, and Zhou (2002) suggested that this success may become part of the observer's memory, as the viewer "may come to believe that they were always capable of exhibiting such behavior" (p. 203). Dowrick (2012) also proposed a connection to neurology, particularly to research about behavior imitation and mirror neurons, as an additional theory to be explored as a possible explanation for the effectiveness of VSM.

Compared to the extensive review of VSM's application to children, adolescents, young adults, and people with disabilities, there remains a need to expand the current more limited literature base regarding use of VSM with adults (Dowrick, 1999). A meta-analysis of 49 studies conducted by Buggey and Ogle (2012) revealed only five studies examining VSM use with adults, only three of which included adults without disabilities (Cream, O'Brian, Jones, Block, Harrison, Lincoln, et al., 2010; Dowrick & Hood, 1981;

Dowrick & Ward, 1997; Magill-Evans, Harrison, Benzies, Gierl, & Kimak, 2007; Meharg & Lipsker, 1991).

There is also growing support for VSM's positive impact on adult behavior, particularly parent behavior, toward children (Benzies, Magill-Evans, Kurilova, Nettel-Aguirre, Blahitka, & Lacaze-Masmonteil, 2013; Kahn, 2014; Meharg & Lipsker, 1991; Reamer, Brady, & Hawkins, 1998). Meharg and Lipsker (1991) utilized video self-modeling to support four mothers' use of selective attention, direct and clear commands, and contingent praise with their children. The researchers found that parental and child behavior did not significantly change until the mothers utilized more direct and concise commands. Reamer et al. (1998) also successfully utilized a combination of techniques that included video self-modeling to support interactions between parents and their children during self-care activities and play activities which generalized to other non-training tasks and settings.

VSM's effective application to behavior that has fallen below its desired level or rate, specifically with communication issues, social interaction, parent behavior toward children, and vocational skills, provides encouraging support for the possibility that VSM may be an effective approach to promoting teacher use of behavior-specific praise (Hawkins & Heflin, 2011). VSM has recently been applied towards increasing the use of behavior-specific praise by teachers in one study, which specifically utilized a self-contained high school setting (Hawkins & Heflin, 2011). Hawkins and Heflin (2011) combined VSM with visual performance feedback (VPF) and positive reinforcement of participant behavior. VPF involved the interventionists providing participants with illustration of each respective participant's progress on a graph throughout the study; this

was coupled with praise provided by the interventionist to the participant for their progress thereby reinforcing his or her use of behavior-specific praise based on the graphed data (Hawkins & Heflin, 2011). Hawkins and Heflin (2011) reported promising results and respective percentage of non-overlapping data (PND) values for the three participants as 80%, 90%, and 80% (PND is defined and explained in more detail in Chapter III). Given that performance feedback is a variable with empirical evidence supporting its capacity for impact on behavior change, further examination of the use of VSM in this capacity while controlling for the impact of multiple simultaneous interventions may provide clarification about the specific influence of VSM on teacher use of behavior-specific praise (Acker & O’Leary, 1987; Andrews & Kozma, 1990; Armstrong et al., 1988; Cossairt et al., 1973; Devlin-Scherer et al., 1997; Hall et al., 1968; Hiralall & Martens, 1998; Hawkins & Heflin, 2011; Kazdin, 2011; Lannie & McCurdy, 2007; Madsen et al., 1968; Reinke et al., 2007; Shadish, Cook, & Campbell, 2002; Simonsen, et al., 2010; Sloat et al., 1977; Stormont et al., 2007; Sutherland et al., 2000; Swinson & Harrop, 2005). This study will attempt to control for multiple-treatment interference, an external validity threat (Kazdin, 2011), in order to examine if and how VSM alone may contribute to any behavior change for classroom teachers who provide educational services to students with behavior support needs in an alternative educational setting.

### **Statement of Purpose**

The purpose of this study was to evaluate the effectiveness of VSM as a possible individualized training strategy to increase and sustain the frequency of behavior-specific praise given by teachers who deliver instruction to students with disabilities,



predominately emotional behavioral disorders, with behavior support needs in an alternative educational setting. This study extends the work of Hawkins and Heflin (2011), Myers et al. (2011), Pisacreta et al. (2011), Sutherland et al. (2000), and Thompson et al. (2012) by examining teacher use of behavior-specific praise, with attention to the isolation of video self-modeling as a single independent variable, and its impact as an individualized intervention.

### **Research Question**

The specific research questions for this study were as follows: (1) Does VSM increase the frequency of behavior-specific praise given by teachers who deliver instruction to students in an alternative educational setting? (2) If so, can sustainability of increased behavior-specific praise also be demonstrated through use of VSM?

### **Chapter III: Method**

#### **Design**

A single-subject multiple baseline design across participants was used to determine the effectiveness of video self-modeling in improving and sustaining rates of behavior-specific praise. This design allowed for comparison between baseline and intervention, maintenance, and follow-up conditions across participants in order to examine whether there was demonstration of experimental control through at least three replications of effect (Campbell & Stanley, 1963; Horner, Carr, Halle, McGee, Odom, & Wolery, 2005; Kazdin, 2011; Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2010). The selection of this design was also guided by the attempt to control threats to internal validity (such as participant histories, maturation, regression, instrumentation, selection, and interaction effects) by staggering the timing of participant viewing of VSM positive self-review (PSR) videos (Campbell & Stanley, 1963; Horner et al., 2005; Kazdin, 2011; Kratochwill et al., 2010). The inclusion of a maintenance phase, (sometimes referred to as a withdrawal phase when single-case designs do not employ a multiple baseline format) allowed investigation of whether (a) any increased rates of behavior-specific praise were maintained in the absence of the VSM intervention, or whether (b) rates of behavior-specific praise returned to baseline levels, although any changes cannot be interpreted as confirmation of a functional relationship between VSM and behavior-specific praise within participants (Hawkins & Heflin, 2011; Riley-Tillman & Burns, 2009). Given the need for interventions that demonstrate sustainability, the study also utilized a follow-up phase (sometimes referred to as an extended or delayed maintenance phase or probe) to assess if any increases in participants' use of behavior-

specific praise were maintained over a more extended time after the VSM intervention was withdrawn (Hawkins & Heflin, 2011; Rickards-Schlichting, Kehle, & Bray, 2008).

### **Setting and Participants**

**Setting selection.** A non-residential alternative educational program was extended an invitation to participate in the current study through the researcher's contacts. This program serviced students with varying disability classifications, predominately emotional behavioral disabilities, all of whom had a common need for intensive behavior support which resulted in a referral to the program by their respective Local Educational Agency (LEA). Given these students' behavioral needs, this alternative education program had recently adopted *School-Wide Positive Behavior Interventions and Supports* (SWPBIS) within the past two years prior to this study.

Of the three separate school buildings belonging to the program, the school selected for this study was chosen by the program's administrator. Table 1 displays the participating school's demographics and descriptive information. At the time of the study, the school contained six classroom teachers, four female and two male. Other staff in the classrooms, who are called instructional associates, supported and assisted both teachers and students; they comprised a total of 12 additional staff, nine female and three male. Student enrollment for this school at the time of the study comprised 39 students spanning grades 4-12, 28 of whom were male, 11 were female. All students received special education services (including academic, behavior, and counseling support, with additional services, such as speech/language and occupational therapy, provided based on individual student special education needs), 23% were ethnically diverse, and 74% qualified for free/reduced lunch (see Table 2).

**Participants.** Following the administrator's selection of the school site for the study, the researcher attended a meeting of all staff to introduce the study and offer classroom teachers the opportunity to participate. Written consent forms were reviewed and distributed to all eligible classroom teachers. The researcher offered availability to answer questions and indicated that teachers could voluntarily and independently review the consent forms at their leisure separate from the staff meeting.

This study was designed utilizing a multiple baseline format across participants with a minimum of three participants in order to document possible treatment effect. The possibility of participant attrition was considered and therefore selection of at least four participants was planned. As such, the first four participants who returned signed consent forms were selected for participation in this study. All four participants met inclusion criteria for status as a state-certified classroom teacher. Table 2 displays descriptive information about the participants' classroom characteristics. Both male and female teachers, classroom assistants, and students were represented, spanning grades 4 through 12, with classroom staff-to-student ratios ranging from 3:5 to 3:7.

The purpose of the study was declared to participants during the informed consent process. Participants were assured through the informed consent process, as well as throughout the study that all identifiable information, including video footage, was stored and protected as confidential information. Deception, sometimes utilized as a research procedure to reduce the effects of participant expectations (a threat to internal validity) (Day & Altman, 2000), was not used for this study as it was predicted that the behavior of interest would become evident during the intervention phase when participants viewed their respective VSM video vignettes. However, participants were not provided with data

(whether in verbal or visual form) or verbal feedback from the researcher about their behavior or progress during the study.

Although students in the participating teachers' classrooms were not participants in this study, the possibility of student images on the subsequent video footage required parental notification. Written parent notification of the study, including an option to request their child's image not be recorded, was sent to parents/guardians following the selection of teacher participants and prior to initiation of the pre-baseline phase. Only one parent requested video recording of her child's image be avoided, and the request was honored.

## **Materials and Measures**

**Dependent variables.** The dependent variables selected for this study were *behavior-specific praise statements* (BSPS), *non-specific praise statements* (NSPS) and *reprimands* (Hawkins & Heflin, 2011; Thompson et al., 2012). Following the model of Hawkins and Heflin (2011), this study contrasted behavior-specific praise (the primary dependent variable) with non-specific praise statements and reprimands. Non-specific praise statements were considered non-examples of behavior-specific praise and reprimands (negative feedback) were considered incompatible behaviors with behavior-specific praise (Hawkins & Heflin, 2011).

Behavior-specific praise statements (BSPS) were "defined as a verbal statement (a) indicating approval, (b) describing a specific desired social or academic behavior exhibited by the student, and (c) including a praise word (e.g., great, appreciate, excellent)" (Thompson et al., 2012, p. 528). Examples of BSPS include "Susan, excellent job raising your hand and waiting for me to call on you" and "Thank you for completing this item on your worksheet." (Hawkins & Heflin, 2011). Some examples of behavior-

specific praise utilized by participants in the study include: “Nice job showing me you’re ready to work by following directions.”, “Nice job waiting patiently.”, “I like how you erased it and didn’t write over it.”, “Thank you for reminding me.”, “Thank you for sharing your opinion.”, “Thank you, you gave us a perfect example.”, “Thank you for asking appropriately.”, “It’s nice that you came prepared.”, “Everyone is participating, that’s great.”, and “Thank you for sitting quietly.”

Non-specific praise statements (NSPS) were considered positive statements communicated verbally by the teacher to a student(s) that do not specify a desired student behavior (Hawkins & Heflin, 2011). Examples of non-specific praise statements include “Thank you” and “Good work.” (Hawkins & Heflin, 2011).

Reprimands were considered negative feedback or statements communicated verbally by the teacher to a student(s) (Hawkins & Heflin, 2011). Examples of reprimands include “I will not tolerate this,” and “Stop it.” (Hawkins & Heflin, 2011). Reprimands did not include instructions, prompting or behavioral reminders delivered with neutral tone and volume, such as “You need to line up at the door.” (Hawkins & Heflin, 2011).

**Frequency count event recording form.** The frequency of all three dependent variables was measured by event recording using a paper and pencil data collection method during study observations (see Appendix A). Event recording of frequency counts of the three dependent variables were collected during the last 20 minutes of the 25-minute observation periods. Data collection did not occur during the first five minutes of the observation to help reduce the possible impact of participant reactivity to the

arrival of the observer(s), a threat to the internal validity of the study (Shadish et al., 2002).

**Independent variable.** Video self-modeling, specifically positive self-review (PSR) of use of behavior-specific praise statements (BSPS), was utilized as the independent variable for this study (Dowrick, 1999). All participants' PSR video vignettes for all treatment sessions were at least and approximately two minutes in length (Dowrick & Raeburn, 1995). Video footage for the vignettes was recorded during baseline and intervention observation periods utilizing an Apple© iPad and edited on an Apple© Macbook Pro using the built-in iMovie© software program (Buggey, 2012). The iMovie© software program included features for cropping film clips which allowed the researcher to highlight and emphasize appropriate behavior-specific praise behavior (Buggey, 2012). During the baseline and intervention phases, video footage was analyzed and edited by the researcher by isolating 0.5-second to 5-second clips of the participant utilizing behavior-specific praise until at least a 2-minute length vignette was obtained. To ensure this length, and only if needed, some clips were repeated elsewhere in the vignette.

**Verbal script.** A verbal script was utilized by the researcher during all treatment sessions with each participant (see Appendix B). The purpose of the verbal script was to ensure the researcher's communication with the participants during the video viewing sessions was near identical across participants and sessions. Ensuring that information was delivered consistently across all sessions helped reduce threats of extraneous variables to internal validity, with specific possible threats in this study's intervention procedures identified as experimenter expectancies as well as performance feedback

about participant progress, a variable with empirical evidence supporting its capacity for impact on behavior change (Acker & O’Leary, 1987; Andrews & Kozma, 1990; Armstrong et al., 1988; Cossairt et al., 1973; Devlin-Scherer et al., 1997; Hall et al., 1968; Hiralall & Martens, 1998; Hawkins & Heflin, 2011; Lannie & McCurdy, 2007; Madsen et al., 1968; Reinke et al., 2007; Shadish et al., 2002; Simonsen, et al., 2010; Sloat et al., 1977; Stormont et al., 2007; Sutherland et al., 2000; Swinson & Harrop, 2005). Therefore, the introduction section of the verbal script included a reminder to participants that verbal feedback about their behavior or progress could not be provided and they were offered an opportunity to debrief with the researcher at the conclusion of the study.

**Treatment fidelity checklist.** Treatment fidelity is essential when determining functional relationships between the dependent and independent variables (Horner et al., 2005). Unreliability of treatment implementation, a threat to statistical conclusion validity, was addressed in this study through the condition of the experimenter and implementer of the intervention being one and the same, audio-recordings confirming treatment delivery, and use of a treatment integrity checklist by a third research assistant (Shadish et al., 2002). This doctoral-level research assistant reviewed the audio recordings of all 20 treatment sessions in a separate location from the researcher and rated the fidelity of treatment implementation for each session based on five criteria delineated on the *treatment fidelity checklist* (see Appendix C). Satisfactory fulfillment of each criterion was assessed and this quantity was then divided by the number of applicable criteria and multiplied by 100 to obtain the percentage fidelity for each session (Shadish et al., 2002).



The composition of the treatment fidelity checklist was based on the need to confirm adherence to study procedures and address threats to internal validity. Five criteria, frequently cited in the literature, were used: The first criterion, “At least two days and not more than seven days had passed since the participant’s previous session (not applicable to session #1 with each participant)”, addressed whether the scheduling and occurrence of the session was consistent with the spacing effect (Bahrick, Bahrick, Bahrick, & Bahrick, 1993; Dempster, 1988; Rickards-Schlichting et al., 2008). Research on the spacing effect suggested that learning is maximized when information is presented or delivered at spaced intervals, as opposed to information delivered altogether at one time (Dempster, 1988). The second criterion, “The video vignette presented to the participant (recording of participant’s voice in his or her classroom) was approximately two minutes in length”, addressed whether the session demonstrated consistency in treatment delivery, specifically the length of the video vignette conforming to Dowrick’s (1999) recommendation of vignettes that are two to four minutes in length. The third criterion, “No feedback of participant performance (no reference made to the quality or quantity of the participant’s behavior in his or her classroom) was given by the researcher to the participant”, addressed the absence of feedback about performance or progress (Dowrick & Raeburn, 1995; Shadish et al., 2002). The fourth criterion, “The researcher thanked the participant for watching his or her video vignette”, addressed confirmation of full treatment implementation, that the participant watched his or her video vignette in its entirety, evidenced by the researcher’s closing remarks and reinforcement (in the form of behavior-specific praise) for participant attention to the video, sometimes referred to as augmented VSM in the literature (Kehle, Bray, Byer-Alcorace, Theodore, & Kovac,

2012; Kehle et al., 1998; Shadish et al., 2002). The fifth criterion, “The researcher followed the verbal script (any deviations from the script were documented and were in response participant’s questions that did not result in the participant receiving feedback about his or her performance)”, addressed whether the session demonstrated consistency in treatment delivery, specifically that the content of the researcher’s presentation remained identical across the participants (Shadish et al., 2002).

**Social validity survey.** Social validity refers to the consumer’s perspective of the social relevance, importance and acceptability of an intervention (Schwartz & Baer, 1991). Social validity has important implications for the development of interventions in research and practical applications (Bellini & Akullian, 2007). In this study, a social validity survey adapted from a survey developed and utilized by Hawkins and Heflin (2011) was utilized to assess participants’ consumer satisfaction with the intervention as well as participants’ specific perceptions of the intervention and the target behavior behavior-specific praise (see Appendix D). The survey included 14 questions with responses indicated on a 5-point Likert scale (1- Strongly disagree, 2- Disagree, 3- Neither agree nor disagree, 4- Agree, 5- Strongly agree).

## **Procedures**

**Pre-baseline.** Following the gathering of participant consent, written notification of the study was provided to the parents/guardians of all of the students in each of the participants’ classrooms. One parent indicated they preferred their child’s image not be included in the collection of video footage for this study. Accordingly, the researcher situated the position of the materials utilized for video recording in such a way that this

student was not seated in the frame of the recording during all observations throughout the entire study.

Following the model of Hawkins and Heflin (2011), steps were taken to help the participating teachers (as well as their students and other classroom staff) become accustomed to the researchers' presence and materials used for video recording in the classroom. Prior to the baseline phase, the researcher and second observer were present in each of the four participant's classrooms with materials set-up for video recording (although not recording) for at least 25 minutes once weekly for four weeks (Hawkins & Heflin, 2011).

**Interobserver agreement.** During the pre-baseline phase, the researcher collaborated with a doctoral-level graduate student observer and trained this second observer on recognition of the three dependent variables and the data collection procedures. First, the researcher reviewed the operational definitions of the three dependent variables with the second observer in advance of pre-baseline observations. The researcher and second observer then practiced collecting frequency data during the pre-baseline phase totaling 16 observations. Immediately following each observation, the observers debriefed and reviewed data and examples, allowing for feedback and discussion regarding occurrences of each of the three dependent variables. Interobserver agreement (IOA) was calculated to determine the percentage agreement using a total count IOA  $((\text{smaller total \#}) / (\text{larger total \#}) \text{ multiplied by } 100)$  and a mean count IOA  $((\text{sum of all ratios}) / (\text{\# of observations}) \text{ multiplied by } 100)$  (see Table 3 and Table 4). Hartmann, Barrios, and Wood (2004) recommended a range of 80-90% as a minimum acceptable value for percentage agreement. The researcher and second observer

continued observations together until the pre-baseline phase was complete, at which time IOA exceeded 90%, the total count IOA was 99.65%, and mean count IOA was 98.25% across all four participants across all three dependent variables for all 16 pre-baseline phase observations (see Table 4).

Kazdin (2011) recommended IOA be assessed for at least 20% of the observation sessions (across all participants for all phases of the study). Kratochwill et al. (2010) also recommended collection of IOA for at least 20% of the total observations across baseline and intervention conditions. The entire study comprised of 92 observations (excluding pre-baseline), of which 21, or 23%, of the observations included IOA. For those IOA observations, the total count IOA was 99.03% and mean count IOA was 99.51% across all four participants across all phases for the three dependent variables for all 21 observations (see Table 3 and Table 4). Observations for interobserver agreement for individual participants within each respective phase for this study were dependent on scheduling arrangements and other limitations (discussed in Chapter V); consequently, IOA was assessed for a range of approximately 0-50% of the observation sessions (for individual participants and specific phases) after the pre-baseline phase (see Table 3). Of the subsequent 16 phases (four phases across four participants) that exclude pre-baseline, 11 phases, or 69% of the phases included IOA observations for at least 20% of the sessions.

**Baseline.** During baseline and all subsequent phases of the study, the researchers used 25-minute systematic observations during which the last 20 minutes of the observation were utilized to record the behavior of the four participants in each of their respective classrooms. Observations included video recording for documentation of data

collection of the dependent variables (behavior-specific praise statements, non-specific praise statements, and reprimands) and for the creation of VSM video vignettes utilized in the intervention phase (Hawkins & Heflin, 2011). Similar to the study conducted by Hawkins and Heflin (2011), it was necessary that scheduling was based on participant convenience and thus observations occurred at multiple times of day (morning and afternoon), during multiple content/subject instructional times (literacy and math), and included multiple instructional methods (whole-group, small-group, independent work).

**Intervention.** Initiation of the intervention phase was planned when adequate stable baseline data were established, and for this study, involved at least three to five data points (at least three to five observations, spaced at least 24 hours apart) (Kazdin, 2011). The minimum of five data points per phase, recommended by What Works Clearinghouse (WWC) (Kratochwill et al., 2010), were obtained for all baseline phases in this study.

Using a staggered schedule, the researcher met separately with each of the participants to present their respective positive self-review video vignettes on five occasions over a period of three weeks (for each participant) for a study total of 20 sessions over eight weeks for the entire intervention phase of the study (Rickards-Schlichting et al., 2008). Intervention sessions were scheduled at the convenience of each participant and were spaced at a minimum of two days to a maximum of seven days between sessions in order to maximize learning potential through the spacing effect (Bahrick et al., 1993; Dempster, 1988; Rickards-Schlichting et al., 2008).

The 25-minute classroom observations continued during the intervention phase and were conducted as defined in the baseline phase. The second observer, despite having

had prior awareness of the scheduling of the baseline phase due to the pre-baseline phase procedures, remained blind to occurrence and timing of the intervention and maintenance phase for all participants, which was planned to help reduce the impact of observer bias for at least one of the two observers as a threat to internal validity (Shadish et al., 2002).

**Maintenance.** Following the completion of five treatment sessions, the maintenance phase began for each participant. Data collection continued during the maintenance phase and was discontinued for each participant when either adequate data were obtained following the completion of the final VSM video viewing for that respective participant or, in some cases, if other limitations (discussed further in Chapter V) prevented further data collection (Kazdin, 2011).

**Follow-up.** Following the model of Rickards-Schlichting et al. (2008), the follow-up phase (sometimes referred to as a delayed maintenance phase or probe) was identical to the baseline phase and took place simultaneously for all participants approximately one month following the completion of the maintenance phase for the fourth and final participant. The participants did not receive the VSM intervention (did not view any of their edited video vignettes) between the end of the intervention phase and the follow-up phase because the purpose was to determine whether any changes in behavior were maintained without ongoing intervention (Hawkins & Heflin, 2011). Following the data collection procedures of the follow-up phase, participants were asked to complete the social validity survey.

## **Data Analysis**

**Single-case design standards.** Interpretation and discussion of results were guided by What Works Clearinghouse (WWC) criteria for single-case design standards as well as evidence standards for determining intervention effectiveness (Kratochwill et al.,

2010). Kratochwill et al. (2010) recommended study classification of *Meets Evidence Standards*, *Meets Evidence Standards with Reservations*, or *Does Not Meet Evidence Standards* when utilizing WWC design standards to evaluate a single-case study's internal validity.

Following the review of the WWC design standards, outcomes of multiple baseline single-case studies can be evaluated through visual and statistical analyses to assess changes in multiple factors, including level, trend, stability and variability, as well as the magnitude of change (effect size), from the baseline phase to the intervention phase and to other subsequent phases (Kratochwill et al., 2010; Riley-Tillman & Burns, 2009). Visual analysis of the data along with evaluation of effect sizes has advantages, with at least four described by Parker, Vannest, and Brown (2009) as “objectivity, precision, certainty, and general acceptability” (p. 137), supporting a comprehensive assessment of single-case study results. Manolov, Solanas, Sierra, and Evans (2011) also suggested that assessment of “treatment effectiveness can be readily complemented by both visual and statistical analyses” (p. 533).

Parker et al. (2009) suggested that reporting of effect sizes facilitates comparison of findings across multiple studies and that “effect size calculation can serve the primary goal of establishing a functional relationship between intervention and behavior... however, an effect size cannot duplicate the breadth and integrated nature of holistic visual analysis (e.g., simultaneous consideration of [changes in level, trend, variability, etc.]) ...” (p. 136), and further described effect size as supplemental to visual analysis. Similarly, What Works Clearinghouse (WWC) recommend visual analysis as a primary step in determining intervention effectiveness to studies that meet design standards (with

or without reservations), followed by the supplementary use of effect size calculations if visual analysis supports changes in the data (Kratochwill et al., 2010). Swaminathan, Rogers, Horner, Sugai, and Smolkowski (2014) further noted that interpretations of effect size, while important in single-case design, can neglect serial dependence, the tendency of observation data to be related or dependent on the previous observation or data point. Therefore, this study utilized a combination of both analyses, with visual analysis considered first and effect sizes presented for comparison.

**Visual analysis.** Visual analysis was utilized in the primary determination of functional dependency, or causal relationship, between the independent variable (video self-modeling) and the primary dependent variable (behavior-specific praise statements) (Kratochwill et al., 2010). When determining the presence of a causal relationship using WWC evidence standards, Kratochwill et al. (2010) recommended study classification of *Strong Evidence of a Causal Relation*, *Moderate Evidence of a Causal Relation*, or *No Evidence of a Causal Relation*.

Visual analysis included examination of all dependent variable data: the frequency of behavior-specific praise statements, non-specific praise statements, and reprimands across all phases of the study (Gast, 2010). The level, trend, immediacy, stability and variability of each data series were calculated within each phase and the changes in these features were compared across phases (Kratochwill et al., 2010). Level was defined as the mean of all data points within a phase (Riley-Tillman & Burns, 2009). Percent change in level was also assessed. Trend was defined as rate of change in the data set within each phase and was calculated by utilizing the split-middle technique (Kazdin, 1982; Riley-Tillman & Burns, 2009). Immediacy was calculated as the change in level



between the last three points in one phase and the first three points in the next phase (Riley-Tillman & Burns, 2009). Stability was defined as the absence of a trend in the direction of the expected change and lack of extreme variability around the mean (Horner et al., 2005; Kazdin, 2011). Variability was defined as the range in the data set, presented as low-high ranges of the frequency of each dependent variable, with consistency defined as the standard deviation for the data within each phase (Riley-Tillman & Burns, 2009).

**Statistical analysis.** As “there is currently no clear consensus on which [effect size] is the most appropriate for analyzing [single-subject designs]” (Manolov et al., 2011, p. 534) and currently no effect size calculation available without fundamental weaknesses (Maggin, Swaminathan, Rogers, O’Keefe, Sugai, & Horner, 2011), multiple statistics were selected based on preliminary visual analysis for a more thorough consideration of effect size (Manolov et al., 2011). Effect size calculations included one parametric statistic: standard mean difference (SMD), and two non-parametric statistics: percentage of non-overlapping data points (PND) and improvement rate difference (IRD) (Bellini & Akullian, 2007; Busk & Serlin, 1992; Olive & Smith, 2005; Parker, Hagen-Burke, & Vannest, 2007; Parker & Vannest, 2009; Parker et al., 2009).

The standard mean difference (SMD) was utilized as a measure of the magnitude change that gives equal consideration to all data within a phase and takes into account the distribution of this data around the mean of the phase (Olive & Smith, 2005). SMD can complement visual analysis, particularly the change in level across phases (Olive & Smith, 2005). SMD was calculated by subtracting the mean of the baseline phase data points from the mean of the treatment phase data points (and when appropriate, follow-up phase data points) and then dividing by the standard deviation of the baseline data points;

SMD calculations between .20 and .49 may suggest small effects, .50 to .79 may suggest medium effects, and .80 and greater may suggest large effects (Busk & Serlin, 1992; Olive & Smith, 2005).

The percentage of non-overlapping data points (PND) was another statistic utilized to assess effect size and can conceptually complement visual analysis of data overlap when considering the range, or variability, of the data points across phases (Parker & Vannest, 2009). PND was determined by calculating the percentage of intervention data points (and when appropriate, follow-up data points) that do not overlap with the highest baseline data point (Bellini & Akullian, 2007; Scruggs & Mastropieri, 1998). The use of the highest data point (or lowest data point, depending on the direction of anticipated treatment effects) makes this statistic susceptible to variances and outliers in the data and to floor and ceiling effects (Marquis, Horner, Carr, Turnbull, Thompson, Behrens, et al., 2000). PND may also fail to adequately capture the magnitude of change across phases (Wolery, Busick, Reichow, & Barton, 2010). Although this statistic has limitations, PND has been promoted as having utility in statistical analysis of the effectiveness of interventions in single-case design (Olive & Smith, 2005; Scruggs & Mastropieri, 2001; Wolery et al., 2010). Scruggs and Mastropieri (1998) suggested that PND calculations can reflect the effectiveness of an intervention using the following scoring criteria: scores below 50% may indicate intervention ineffectiveness, 50 to 70% may indicate results are questionable, 70 to 90% may indicate intervention effectiveness, and scores above 90 may indicate the intervention is very effective.

Improvement rate difference (IRD) was an additional calculation of effect size that summarizes differences in improvement at the intervention phase (or other phases)

compared to baseline (Parker et al., 2009). Parker et al. (2009) also specified that IRD “showed better sensitivity than PND, and was more strongly validated by external measures” (p. 148), which supported the use of this statistic along with SMD and PND in calculating effect size in this study for a more comprehensive data analysis. IRD was calculated by using the following formula provided by Parker et al., (2009):

$$IRD = IR_{Tx} - IR_{Ba}$$

IR for treatment was calculated by obtaining the number of treatment phase points in each treatment phase for each participant that exceed all points in baseline and divided by the total number of data points in each participant’s respective treatment phase (Parker et al., 2009). IR for baseline was calculated by obtaining the number of baseline points in each baseline phase for each participant that equal or exceed any point in that participant’s treatment phase and dividing by the total number of data points in each participant’s respective baseline phase (Parker et al., 2009).

Parker et al. (2009) suggested an IRD calculation of 1.00 may indicate all treatment phase data points exceeded all baseline data points, and if the trend is in the direction of desired treatment effect, then the treatment may be considered highly effective. They estimated tentative benchmarks for IRD as follows: .50 and below may represent questionable and very small effects, .50 to .70 may represent moderate effects, and .70 or higher may represent large to very large effects. The possibility of a negative IRD score exists, and such an occurrence could indicate a decline below baseline levels (Parker et al., 2009).

**Treatment integrity.** Fulfillment of each of the five criteria on the treatment integrity checklist was recorded by a third research assistant. Treatment fidelity was calculated by dividing the number of steps completed by the total number of steps

indicated (or applicable) on the fidelity checklist and then multiplying by 100 (Shadish et al., 2002).

**Social validity.** Following the conclusion of the follow-up phase, participants were asked to complete the social validity survey. Responses from participants on a Likert scale were reviewed qualitatively to assess the acceptability and consumer satisfaction associated with the study.

## **Chapter IV: Results**

### **Treatment Integrity**

Fidelity of intervention implementation was confirmed using the treatment fidelity checklist via the third research assistant reviewing all participants' audio recordings for all 20 VSM intervention sessions (100% of sessions). Treatment integrity was assessed as 100% for all participants for all sessions of the study.

### **Participant 1**

During the baseline phase, data for behavior-specific praise statements (BSPS) for Participant 1 indicated an increasing trend in use of BSPS from observations 1-3 and a decreasing trend in observations 3-5 (see Table 5 and Figure 1). This finding indicated a behavior pattern in the opposite direction of the anticipated treatment effect and thus the scheduling of intervention sessions with this participant began. Data collection continued during the interim time between the scheduling of the first session and the occurrence of the first intervention session, and resulting data indicated a comparatively less severe declining trend and higher variability in the data (resulting in a final range of 1-22 BSPS in a 20-minute period), as well as an increase in the use of BSPS at the final baseline data point (observation 6). These subsequent findings suggested additional baseline observations were needed in order to attain a clearer pattern that could be used to better predict the expected use of BSPS by this participant if the intervention had not been introduced (Kratochwill et al., 2010). As such, additional baseline observations were scheduled for this participant; however the participant was unavailable for Observation Session 7 and also preferred to keep the intervention appointment as originally scheduled.

Despite these limitations in baseline data for Participant 1, an immediate positive change in the frequency, consistency, variability, stability of trend in the data path, with

no overlap of data was noted at the introduction of VSM (after Participant 1 viewed the first edited video vignette exemplifying her use of behavior-specific praise). Specific increases in the frequency of Participant 1's use of BSPS were evident during study observations, in visual analysis of the immediacy of effect (see Figure 1), and a 133% increase in level from baseline to treatment (13.83 to 32.25). This outcome was further supported by the lack of overlap in the data from baseline to treatment, both from visual analysis of the data and then calculation of effect size (percentage of non-overlapping data points (PND): 100%, standard mean difference (SMD): 2.27; improvement rate difference (IRD): 1.00; see Table 5). Participant 1 also demonstrated a decrease in variability in use of behavior-specific praise from baseline to treatment, both as a smaller range (1-22 to 31-33), an increase in consistency noted by the decrease in standard deviation (8.13 to 0.96), and change from slightly decreasing trend in the data path in baseline to a stable trend at treatment.

Changes in the data were visually noted at the removal of the VSM intervention during the maintenance phase as an immediate decrease in level from treatment to maintenance (32.25 to 21.13), although the level remained 53% increased from baseline. This partial return to baseline functioning was supported by the increased overlap of data (PND change from 100% to 50%). Variability in the data during the maintenance phase, although comparatively higher than the intervention phase, remained lower than the variability observed at baseline. Although 11% higher compared to baseline (13.83), further decrease in level compared to intervention was calculated at follow-up (15.33). Additionally, SMD calculation at follow-up (0.18) supported visual analysis that no effect appeared maintained by Participant 1. PND calculation (0%) also indicated that all

follow-up data points overlapped with all baseline data points, and IRD calculation (-0.33) indicated questionable and very small effects and a possible decline below baseline functioning.

By comparison, visual analysis of the data path for non-specific praise statements (NSPS) for Participant 1 indicated change from baseline to intervention, with a 70% increase in level (4.50 to 7.63), stabilizing trend (from decreasing in baseline to stable in intervention), although the variability of NSPS data increased during intervention compared to baseline (see Table 7 and Figure 2). During the maintenance phase, the level decreased but remained above baseline by 47%, the data trend remained stable, and variability remained increased compared to baseline data. Minimal changes in NSPS were maintained at follow-up; the level at follow-up had decreased compared to the maintenance phase but remained above the level at baseline by 26%, with the trend increasing slightly and variability remaining similar compared to baseline.

Use of reprimands was not observed for this participant during this study. Visual analysis of the data path for Participant 1 indicated no change in the absence of reprimands across all phases of the study (see Table 8 and Figure 3).

## **Participant 2**

Visual analysis indicated behavior-specific praise statement (BSPS) data for Participant 2 indicated limited frequency in the use of BSPS compared to the other participants during all phases of the study (see Table 5 and Figure 1). Visual analysis suggested an increase in level from baseline to intervention (1.56 to 2.86) and an increase in level from baseline compared to the maintenance phase (1.56 to 3.50). Level was calculated as 2.00 at follow-up, a 28% increase from baseline. This initial visual analysis

was followed by effect size calculations at intervention (the standard mean difference (SMD): 0.69) and at follow-up (SMD: 0.23). A decreasing trend was noted during baseline, a stable trend during intervention and an increasing trend during the maintenance phase. The highest data point, or highest frequency of BSPS use for Participant 2 during the study, was noted during this participant's intervention phase (a frequency count of 7 during intervention was observed compared to highest frequency data point in baseline of 5). Conversely, visual analysis of the data at intervention suggested that most of the intervention data points overlapped with baseline data points, with the percentage of non-overlapping data points (PND) supporting this finding (PND: 14%), which suggested unreliable treatment effects. The calculation of the improvement rate difference (IRD: -0.86) supported the likelihood of questionable and very small effects. Participant 2 also demonstrated an increase in variability from baseline to intervention, both as a larger range (0-5 to 0-7) and an increase in standard deviation (1.88 to 2.48). PND calculation (0%) at follow-up also indicated that all follow-up data points overlapped with all baseline data points and IRD calculation (-0.11) at follow-up suggested questionable and very small effects and a decline below baseline levels.

By comparison, visual analysis for non-specific praise statements (NSPS) for Participant 2 indicated a slight decrease in level which was maintained across phases, with more consistency and reduced variability in the data during intervention and the maintenance phase (see Table 7 and Figure 2). Visual analysis of the data path for NSPS for Participant 2 indicated relatively unchanged use of NSPS across all phases. Changes were noted in the trend in the data path, which changed from a stable trend in both the



baseline and intervention phases to a slightly increasing trend during the maintenance phase and an increasing trend during follow-up.

Visual analysis of the data path for reprimands for Participant 2 indicated unchanged level across all phases (see Table 8 and Figure 3). Reprimands were used sparingly by this participant during observations throughout the study (range: 0-1 instances in a 20-minute period).

### **Participant 3**

Visual analysis indicated behavior-specific praise statement (BSPS) data for Participant 3 showed an increase in level from baseline to intervention (6.42 to 9.50), with specific immediacy of change (noted in the data path at the start of the intervention phase) evident by the immediate increase in level in the first three data points of the intervention phase compared to the final three data points of baseline (see Table 5 and Figure 1). Participant 3 also demonstrated similarity in variability from baseline to intervention, as measured by range (1-15 to 3-13) and standard deviation (4.14 to 4.43). Participant 3 demonstrated a decreasing trend in baseline and intervention, and an increasing trend during the maintenance phase. An increase in level compared to baseline was also observed at the maintenance phase (6.42 to 13.00). As observed with the data for Participants 1 and 2, a decrease in level compared to intervention was calculated at follow-up (9.50 to 8.33), however, this was 30% higher compared to the level at baseline (6.42). With regard to effect sizes, SMD calculation suggested a medium effect (0.74); however, visual analysis indicated all intervention data points overlapped with all baseline data points which was supported by a PND calculation of 0% suggesting unreliable treatment and IRD calculation (-0.92) suggesting questionable and very small

effects. SMD calculation at follow-up (0.46) would suggest any effects demonstrated by Participant 3 may have been small compared to baseline, however visually analysis and PND calculation (0%) indicated that all follow-up data points overlapped with all baseline data points and IRD calculation (-0.08) indicated questionable and very small effects and a decline below baseline levels.

By comparison, visual and data analysis for non-specific praise statements (NSPS) for Participant 3, specifically with discerning a clear data pattern, was challenging due to fluctuations in the data noted across all characteristics (level, consistency, variability, and trend) ranging from more consistent use of NSPS during intervention that was not maintained at follow-up, to changing trends and variability across the study (see Table 7 and Figure 2).

As observed with Participant 1, reprimands were not an observed behavior for Participant 3 during observations for this study and visual analysis of the data path for this participant confirmed no change in this behavior across all phases (see Table 8 and Figure 3).

#### **Participant 4**

As with Participant 1, challenges with obtaining baseline data were encountered with Participant 4 (see Table 5 and Figure 1). Participant 4 demonstrated a slightly increasing trend in use of behavior-specific praise statements (BSPS) throughout baseline, a trend noted as moving in the direction of anticipated treatment effect, creating a challenge in predicting future performance if there was no introduction of VSM (Kratochwill et al., 2010). Continued data collection in response to this finding resulted in a prolonged baseline for Participant 4 compared to the other three participants. It is

important to note that prolonged baseline can be susceptible to the possibility of maturation and history effects (Kratochwill et al., 2010; Shadish et al., 2002). Following the confirmation of the participant's intervention appointment, an additional limitation to interpretation of this participant's results arose when the final baseline data point for Participant 4 manifested as the highest data point of this participant's baseline phase; although it is recommended that phases not end with an outlier (Kratochwill et al., 2010; Parsonson & Baer, 1978), the intervention appointment was kept due to participant convenience.

While there were limitations in the baseline data for Participant 4 (as with Participant 1), visual analysis of data during the intervention phase suggested an increase in level from baseline to intervention (12.72 to 21.75) and increased variability during intervention, as evident by the increased range (6-20 to 13-32) and increased standard deviation (4.30 to 8.46). However, more data points were collected during baseline (18 observations) compared to the intervention phase (four observations) (see Table 3). Although SMD calculation (2.10) at intervention suggested a possible positive effect, visual analysis and PND calculation (50%) indicated half of the intervention data points overlapped with the baseline data points for this participant.

A decrease in level was noted in the data Participant 4 from intervention to the maintenance phase (21.75 to 14.25), although a slightly increasing trend in the data path and a 12% increase in level were observed during the maintenance phase compared to baseline. Level was calculated as 12.33 at follow-up, a 3% decrease compared to baseline functioning, suggesting no maintenance of any change that may have been seen during intervention; this was supported by effect size calculations at follow-up (SMD: 0.09;

IRD: -0.22) indicating questionable and very small effects and a decline below baseline levels.

By comparison, visual analysis of the data path for non-specific praise statements (NSPS) for Participant 4 indicated minimal change from baseline to intervention, a 4% increase in level (15.11 to 15.75), and more consistency and less variability noted by a decrease in standard deviation and a smaller range in the data (see Table 7 and Figure 2). During the maintenance phase, level increased, remaining above baseline by 26%, trend decreased and variability remained decreased compared to baseline. At follow-up, level had decreased compared to the maintenance phase but remained above baseline by 17%.

In contrast, use of reprimands by Participant 4 during baseline was notably infrequent (see Table 8 and Figure 3); however visual analysis of the data path for reprimands for Participant 4 during the maintenance phase and at follow-up indicated an increase in the frequency of reprimands with a slightly increasing trend.

### **Social Validity**

At the conclusion of the follow-up phase of the study, participants were asked to complete the social validity survey. All four participants returned the survey (see Table 11). Qualitative analysis of the participants' responses on the survey indicated endorsement of items specifying strong agreement that video viewing of their behavior was helpful, behavior-specific praise helps students, specificity in praise statements improved participants interactions with their students, a likelihood that participants would communicate their learning about behavior-specific praise to colleagues, and a likelihood of participants' continued use of behavior-specific praise in the future (Hawkins & Heflin, 2011). The presence of observers in the classroom and researcher-tracking of

participant behavior (as opposed to participant self-tracking) were specific factors of the study that elicited a greater range of responses from participants, each factor eliciting responses of an opposing preference (one endorsement of “Strongly Disagree” for the statements “I enjoyed having two observers in my classroom” and for “I liked participating in the research project”; one endorsement of “Strongly Agree” for the statement “I would have preferred to keep track of my BSPS rather than have an observer record my praise statements.”) (Hawkins & Heflin, 2011).

## Chapter V: Discussion

### Summary of Findings

While this study appears to meet criteria for single-case design standards as *meeting standards with reservations*, the overall results of this study did not appear to meet visual analysis criteria to allow for conclusive interpretations of effect size and of replication of effects across participants (Kratochwill et al., 2010). With the exception of Participant 1, in which changes in the data from baseline to intervention were clearly evident, other changes in participant data may not be supported by additional features of visual analysis, especially when considered in conjunction with study limitations. Predictable patterns of behavior were challenging to confirm, particularly due to changes in variability, consistency, trend, and immediacy of change, with limited improvement noted by visual analysis and inconsistent effect sizes (see Table 9 and Table 10). In this study, video self-modeling's effectiveness as an intervention to increase teacher use of behavior-specific praise is unclear and the results suggest video self-modeling and behavior-specific praise use by teachers needs further empirical study in order to make assertions about functional dependency.

Participants demonstrated comparatively less change in their use of non-specific praise statements (NSPS) after the introduction of the VSM intervention, an intervention which had focused on behavior-specific praise (see Table 7 and Figure 2). Similar to findings reported by Hawkins and Heflin (2011) and in contrast to the hypothesis suggested by Gable et al. (2009), data for the use of reprimands suggested reprimands were either unused or sparingly used by participants during observations for this study,

with limited to no change noted across phases, with the exception of a slight increasing trend demonstrated by Participant 4.

## **Interpretation of Results**

**Analysis of design standards.** Appraisal of this study's internal validity included consideration of What Works Clearinghouse (WWC) criteria for single-case design standards (Kratochwill et al., 2010). This study appeared to meet *evidence standards with reservations* by satisfying the following criteria: (a) the independent variable, the video self-modeling intervention, was “systematically manipulated with the researcher determining when and how the independent variable conditions change” (Kratochwill et al., 2010, p.14), (b) this study involved collection of interobserver agreement (IOA) for at least 20% of the total observations across baseline and intervention conditions (see Table 3), (c) this study included four attempts to demonstrate treatment effect at four different points in time across the four participants, which met WWC criteria for at least three opportunities for demonstration of effect, and (d) this multiple baseline design included eight phases with at least four data points per phase thereby meeting the minimum recommended six phases with at least three data points per phase (Kratochwill et al., 2010).

**Analysis of evidence standards.** For studies that meet standards with reservations, Kratochwill et al. (2010) recommend examination of whether the study provides evidence at least three demonstrations of intervention effect through visual analysis of the data. Utilizing this approach, this study did not appear to confirm evidence of a causal relationship between the independent variable, video self-modeling, and the dependent variable, behavior-specific praise. Multiple aspects of visual analysis

highlighted equivocal changes in the data. This was particularly evident when level increases and percentage of level changes from baseline to intervention were analyzed and appeared to suggest improvement (see Table 5), however, further consideration of additional components of visual analysis (consistency of data patterns, variability, trend, overlap, immediacy, changes in other participants' data after phase changes for a participant) revealed ambiguity in the data, creating a challenge in determining replication of effects across participants.

While changes noted from baseline to intervention for Participant 1 included an immediate increase in level, lower variability, increased stability and no overlap in the data, visual analysis of the behavior-specific praise data for Participant 1 (as well as Participant 4) did not yield stable baseline patterns of behavior. However, Participant 1's variability during baseline was associated with the outlier (frequency count of one BSPS during the fifth observation session which occurred on 10/2, see Figure 1), and may be explained partially by the type of classroom activity (educational video viewing by students) occurring at the time of data collection. Additionally, Participant 4 demonstrated an unstable baseline pattern of behavior, particularly a slightly increasing trend in use of behavior-specific praise throughout baseline, a change that occurred during the phase changes for other participants and a trend noted as moving in the direction of anticipated treatment effect, creating a challenge in predicting future performance if there was no introduction of VSM (Kratowill et al., 2010). This participant also demonstrated moderate to high baseline rates of BPS compared to the other participants. Although this comparatively higher baseline rate and increasing trend suggested no need for intervention and did not meet What Works Clearinghouse (WWC)



criteria for a predictable baseline pattern, the intervention was delivered to assess VSM's impact on this participant's praise-giving behavior. Even with this initial improving behavior pattern during baseline, Participant 4 demonstrated an increase in level during intervention compared baseline, however, examination of the proportion of data overlap suggested limited improvement compared to baseline.

Additionally, the presence of a maintenance phase, while included to assess maintenance of any behavior change, also served as a within participant withdrawal phase which assisted the examination of whether the behavior would have continued as demonstrated during baseline if no intervention had been introduced (Riley-Tillman & Burns, 2009). A partial return to baseline functioning was observed in the behavior-specific praise data for Participant 1 and 4. A partial return to baseline can be interpreted as a "threat to experimental control as it is impossible to know if the partial change from baseline was due to the intervention (e.g., something learned) or whether there is some other variable that is also controlling the outcome data" (Riley-Tillman & Burns, 2009, p. 43). Results noted with Participant 2 and 3 offer an alternate interpretation which cannot be confirmed but must be considered: the nature of some interventions (such as the experience of VSM) could prevent returning to original baseline functioning due to lasting changes in behavior which may have resulted from learning that cannot be reversed (Bellini & Akullian, 2007; Dowrick, 1999; Riley-Tillman & Burns, 2009).

Visual analysis of immediacy of change and trend in the data patterns from baseline to intervention appeared to illustrate immediate change for some participants (Participant 1 and 3), followed by a declining trend during intervention for one participant (Participant 3). Delayed change followed by a declining trend was noted for

Participant 4. Visual analysis also revealed very limited changes for Participant 2 and the possibility of a *non-responder* (Horner et al., 2005) compared to other participants. As it is unclear whether any of the changes (immediate or delayed) seen at intervention for any of the participants were related to the introduction of VSM, consideration was given to the influence of participant expectation and/or participation self-presentation; teachers may have engaged in positive self-presentation following the introduction of VSM, whether VSM increased their awareness of their own behavior or reminded them of the specific behavior of interest for the study (because deception was not utilized in this study's methodology), and whether participants may have then been influenced by knowing they were being observed for the behavior of interest. These confounding variables, often summarized in the literature as the Hawthorne effect, may have influenced study results (Goodwin, 1998). However, as noted by Hawkins and Heflin (2011), the return of baseline level performance during the maintenance phase (after withdrawal of the intervention) for some participants (Participants 1 and 4) should be considered when interpreting the impact of the observers' presence on behavior change during observations as observer presence was a variable that was consistently present across all participants for all phases of the study.

Additionally, the low frequency of BSPS noted in the baseline data for Participant 2 was a finding that appeared most consistent with results found by Gorman-Smith (2003), Shores et al. (1993), and Wehby et al. (1995). Participants 1, 3, and 4 appeared to use more behavior-specific praise statements at baseline compared to Participant 2, and compared to the figures cited in these previous studies. Similar to the results reported by Hawkins and Heflin (2011), Reinke et al. (2007), and Sutherland et al. (2000), two of the

teachers (Participant 1 and 4) appeared to have reduced their rates of behavior-specific praise during the maintenance phase.

**Effect sizes.** While visual analysis did not appear to support evidence of replication of effects across this study, consideration of effect size is presented to support a comprehensive interpretation of outcomes of this study, particularly effect sizes which suggested non-effects as the presence of non-effects can influence the strength of conclusions derived from study data (Kratochwill et al., 2010). As “there is currently no clear consensus on which [effect size] is the most appropriate for analyzing [single-subject designs]” (Manolov et al., 2011, p. 534), multiple statistics were selected for comparison based on preliminary visual analysis (Manolov et al., 2011). When standard mean difference (SMD) calculations were utilized for derivation of effect size, there appeared to be no instances of non-effect (the ratio of effects to non-effects was 4:0). Conversely, when percentage of non-overlapping data points (PND) calculations were utilized for effect size (see Table 9), there appeared to be two instances of non-effect (the ratio of effects to non-effects was 2:2). This was also true if improvement rate difference (IRD) calculations were utilized for estimation of effect size, resulting in a 1:3 ratio of effects to non-effects. The medium to large effect sizes suggested by SMD calculations were not consistently supported by visual analysis or PND and IRD calculations. Consequently, PND and IRD calculations implied less change compared to SMD calculations (see Table 6 and Table 9). When changes in the data were assessed at follow-up, visual analysis did not support SMD calculations yielding small effect sizes.

Typically, more thorough understanding of an intervention’s effect size can be obtained by comparing effect sizes across similar single-case studies (Allison & Gorman,

1993; Kratochwill et al., 2010). As Hawkins and Heflin (2011) also reported PND values, comparison was feasible yet cautiously described across this statistic. Hawkins and Heflin (2011), utilizing an intervention that included a combination of video self-modeling and visual performance feedback, reported respective PND values for those three participants as 80%, 90%, and 80%. PND values in the current study were 100%, 14%, 0%, and 50% for the four participants respectively. Compared to PND values reported by Hawkins and Heflin (2011), it can only be postulated that this current study's PND values were more variable. However, this comparison includes only PND calculations from only two studies, both of which have multiple limitations. Furthermore, Allison and Gorman (1993) do not recommend comparison of PND calculations across studies because of the inherent limitations of this statistic, particularly that PND can fail to adequately reflect changes in the mean (level), may be sensitive to the presence of outliers in the data, and may be insensitive to changes in the trend of the data path. Therefore further investigation and study replication, possibly with additional effect size comparisons if visual analysis supports evidence for intervention effectiveness, is still needed (Kratochwill et al., 2010).

### **Social Validity**

While the effectiveness of video self-modeling in this study is unclear, factors such as awareness, relevancy, and self-efficacy were considered when reviewing possible relative increases compared to baseline as well as social validity outcomes. Responses to the survey and participant feedback during study de-briefing suggested an overall positive response and acceptability of video self-modeling, and agreement with the importance and promotion of the use of behavior-specific praise.

**Awareness.** VSM may have increased participant awareness of precise details or subtleties in his or her own behavior that could be improved (Dowrick, 1999), which is particularly important when promoting a target behavior, like behavior-specific praise, in which precision and specificity are essential components. Further empirical study may provide clarification.

**Relevancy.** Consideration of relevancy involves the degree to which VSM and its application to the target behavior addressed a relevant issue or need for the participants (Schwartz & Baer, 1991). The most successful applications of VSM have targeted skills or behaviors that are significant to the observer's adaptive functioning and have targeted behaviors that are necessary in a challenging context and that must be modified to meet the demands of the challenging environment (Bray & Kehle, 2001; Dowrick, 1999; Hitchcock et al., 2003). While qualitative analysis of the social validity survey results supported tentative conclusions about relevancy, further study replication with validated social validity measures may strengthen conclusions concerning VSM's application to behavior-specific praise and how this application may be particularly relevant for participants in challenging contexts or environments (Beaman & Wheldall, 2000; Fullerton et al., 2009; Sutherland et al., 2008; Sutherland & Oswald, 2005).

**Self-efficacy.** Consideration of self-efficacy involves exploring improvements in belief in one's own ability (Bandura, 1997). It is assumed that the edited video vignettes repeatedly provided each of the participants with evidence of their successful use of behavior-specific praise with their students, whether more frequently, and in some cases, more consistently, under circumstances that were real and relevant to participant functioning in the workplace (Dowrick, 1999). Whether this improved participant

confidence in their own ability to successfully carry out this target behavior cannot be determined as changes in self-efficacy were not measured in this study (Bandura, 1997; Kehle et al., 1990). Tentative support for the application of the theory of self-efficacy may be garnered from the social validity survey results that revealed positive feedback from this study's participants, which are comparable to social validity results described in a similar study from Hawkins and Heflin (2011). One participant also commented during the post-study debriefing that she felt viewing positive self-review videos was "validating." In this manner, watching oneself give positive feedback, resulting in evidence of specific positive verbal interaction with students, may have increased the individual's belief in his or her ability to interact positively with students and these specific skill changes may have been integrated into the individual's broad behavioral functioning (Dowrick, 1999; Rickards-Schlichting et al., 2008), however further study is needed to empirically examine this hypothesis.

### **Explanation of Outcome**

The results of this study are interesting because despite participant awareness of the purpose of the study (prior to self-selection for participation as well as throughout the study) and participant reporting of positive feedback about the study and the helpfulness and validation provided by VSM, improvement in the use of behavior-specific praise did not appear to be present or present with better clarity. Indeed, as Dowrick (1999) asserted, the use of video self-modeling in this study was "intended to motivate" (p. 34) and was selected as the intervention due to its empirically demonstrated effectiveness. While it is unreasonable to expect that all participants will respond or respond similarly to a video self-modeling intervention (Benzies et al., 2013), possible explanations for the

ambiguity observed in the data and for the possible presence of non-effects in this study involved four concepts: (a) opportunities to utilize the target behavior (opportunities for participants to provide praise to their students), (b) participant perceptions about the need for change, (c) individual participant factors such as personal factors, complexity of behavior change, and personal philosophy, and (d) acknowledgement of other unknown variables and study limitations (Bear, 2013; Hawkins & Heflin, 2011). The exploration of these variables in future studies may provide a clearer understanding of why participants may have not responded, or not responded more robustly, to the VSM intervention (Benzies et al., 2013).

**Opportunities to provide praise.** One possible explanation for the ambiguity observed in the data includes the varying opportunities for participants to utilize behavior-specific praise with their students (Bear, 2013; Hawkins & Heflin, 2011). Similar to the study conducted by Hawkins and Heflin (2011), the type of instructional activity may have influenced the frequency of behavior-specific praise statements, non-specific praise statements, and reprimands (and verbal feedback given in general) as certain school activities may not have provided sufficient or appropriate opportunity for teacher-student interaction. Dowrick (2012) advised that video self-modeling may not be effective if the opportunity to exhibit the target skill or behavior does not arise. One clear example of this was noted for the outlier in Participant 1's baseline data (frequency count of one BSPS during the observation on 10/2, see Figure 1) during which time the instructional activity involved educational video viewing by her students. Other similar situations may have occurred during study observations and these factors, including student needs, may have influenced participants' perceptions about the appropriateness

and applicability of behavior-specific praise at a given time (Bear, 2013). Bear (2013) further advocated that students may differ in their preference and response to praise, and therefore consideration should be given to characteristics such as age and developmental level when providing feedback to students. Elwell and Tiberio (1994) surveyed high school students and found that 60% preferred private praise, and in some circumstances, preferred no praise instead of public praise. Additionally, Burnett (2002) surveyed students ages 8–12 and found that 52% preferred individualized private praise. When current results were examined in conjunction with the student grade levels represented in this study the following was noted: Participant 1, whose classroom student demographics spanned grades 4-7, showed the clearest changes in behavior-specific praise use from baseline to intervention (immediacy of change with no overlap in the data). Participant 4, whose classroom represented grades 7-8, demonstrated increased baseline rates of behavior-specific praise compared to the other participants and relative changes at intervention (albeit delayed) of an increased level with a percentage of nonoverlapping data (PND) of 50%. Participant 2 and 3 showed comparatively less change and more equivocal results, their classrooms spanned grades 9-11 and 9-12 respectively. While conclusions about the correlation between student grade and teacher use of behavior-specific praise in this study cannot be made, these findings appeared to align with research that supports student praise needs and preferences related to age and developmental level (Bear, 2013; Burnett, 2002; Elwell & Tiberio, 1994).

Similar to the assertion made by Bear (2013), participants in this study did not utilize praise or behavior-specific praise as their sole classroom behavior management strategy, and, at times, the participants were observed using different strategies, such as



planned ignoring. Dowrick (2012) suggested that video self-modeling may not be effective if the targeted skill or behavior can be replaced by a behavior of greater utility or value for the participant.

**Perceptions about the need for change.** While evidence-based strategies, such as video self-modeling and (the more widely promoted) applied behavior analysis, have been recommended as effective approaches to behavior change, Bear (2012) offered an additional hypothesis for consideration: the effectiveness of a technique or strategy to promote a change in a person's behavior may be dependent upon that person's goals. In this study, VSM may have provided participants with confirmation of their skills, but whether or not these skills were then demonstrated may have been influenced by participant perceptions and objectives (Bear, 2012; Dowrick, 1999). Some of these perceptions could include participant belief about their personal need to improve this skill, whether their own behavior change would align with their goals, participant perception about their (and their students') need for change, participant perception about whether it is appropriate to maintain those changes, and participant perception about their ability to then sustain those changes (Bear, 2012; Dowrick, 1999). Dowrick (2012) noted that video self-modeling may not be "effective if there is no perceived value in the goal [or change]" (p. 34), or if changes are perceived as too insignificant to the person.

**Individual factors, complexity, and philosophy.** Individual factors may have influenced differences in participant behavior and responsiveness to the intervention, one such possibility includes possible discomfort with video viewing which, while not reported during study de-briefing, remains an important consideration (Buggey, 2007; Hawkins & Heflin, 2011). Additionally, the complexity of behavioral functioning and the

on-going influences of intrapersonal, interpersonal, and environmental factors may help explain some of the ambiguity in the data (Bandura, 1986; Bear, 2013; Dodge, Coie, & Lynam, 2006; Eisenberg, 2006). Participants may have also had differing philosophical beliefs about the utility and application of behavior-specific praise as a classroom behavior management strategy (Bear, 2013).

**Unknown variables.** Dowrick (1999) acknowledged that video self-modeling may not always be effective or produce clear results, and that sometimes unknown factors may impact a person's responsiveness to VSM, or may impact the maintenance of the participant's current rate of behavior despite exposure to VSM. Additional explanations and limitations, particularly the influence of other extraneous variables on this study's results (participant expectations, history effects, etc.) are important considerations, and discussion of these factors in the Limitations section of this chapter follows (Riley-Tillman and Burns, 2009).

## **Limitations**

Limitations of this study included multiple threats to validity, including data and measurement limitations, setting, participant and procedural factors, and aspects of the study's design that limit conclusions about functional dependence within participants. Mitigation of extraneous variables was attempted through the typical characteristics of multiple baseline design, including multiple replications and staggered introduction of VSM; however it was difficult to rule out the unintended impact of additional variables.

**Data and measurement limitations.** Data regarding the frequency of non-specific praise statements (NSPS) did not include teacher praise behavior that involved the physical giving of tokens as positive reinforcement to students following appropriate

behavior, which was often given to students without verbal feedback from teachers during this study. The NSPS data did not capture this behavior because the initial defining of the operational terms of the dependent variables did not specify or account for this type of positive feedback. As a result, non-specific praise statement data may be an underrepresentation of the positive feedback students are provided by the participants in this study.

Additionally, some phases of this study had less than five data points per phase. However, with the exception of the follow-up phase which comprised three data points for all four participants, all phases in the study had at least four data points per phase. The number of data points collected for each participant was influenced by time and scheduling limitations associated with the delivery of intervention and participant absences resulting in some missing data points. In specific regard to the delivery of VSM, if less than five data points had been collected at the time the fifth and final video-viewing session was completed then subsequently, and unavoidably, the intervention phase included fewer than five data points (Participant 1, 2, and 4). Finally, Riley-Tillman and Burns (2009) recommended a withdrawal phase (or in this study, the maintenance phase) be extended when a slow return to baseline functioning is observed in order to determine if a full return to baseline functioning is occurring; multiple limitations (including participant and observer availability) prevented the extension of the maintenance phase for this study.

Unstable behavior-specific praise statement (BSPS) data during the baseline phase for two of the four participants (Participant 1 and 4) which was followed by less extreme and more stable data after the introduction of the intervention phase suggested

the possibility of a threat to internal validity, regression toward the mean (Kratochwill et al., 2010). Regression towards the mean, or the tendency of data becoming less extreme over time, is a phenomenon that can be misinterpreted as treatment effect (Kratochwill et al., 2010). The decline observed by Participant 4 after the highest data point collected (BSPS frequency of 32; see Figure 1), may suggest an inability to maintain the slightly increasing trend maintained throughout baseline which then increased further at intervention, and this decline gives further credence to the possible impact of regression.

**Setting, participant, and procedural factors.** Selection bias for the school and self-selection of teachers willing to participate in the study are considered threats to validity (Gast, 2010; Kazdin, 2011). Selection bias occurred when the building was selected by the administrator of the program, suggesting the possibility of a perception of need (ex. need for intervention) or some other setting factor that may have impacted the outcome of the study. Additionally, the results of this study cannot be generalized to other settings or teachers without further empirical replications because the specific setting and participant characteristics, as well as small sample size, constituent threats to generalizability (Cohen, 1994; Buggey, 2012; Gast, 2010; Kazdin, 2011).

The promotion of School-Wide Positive Behavior Interventions and Supports (SWPBIS) within this setting, its possible influence on the participants' knowledge about the importance and use of praise as well as its possible influence on the baseline skill level of the study participants (Sugai & Horner, 2009), was a known variable occurring simultaneously with the intervention utilized in this study and can be considered a history effect (Kratochwill et al., 2010; Shadish et al., 2002). A history effect is a possible threat to internal validity, creating a challenge in determining the source(s) of influence on any

observed changes in data results (Kratochwill et al., 2010; Shadish et al., 2002). When interpreting this study's results, considering the possible impact of this simultaneous variable is warranted, however, as all participants were presumed exposed to the continual promotion of SWPBIS, the impact of this specific history effect remains unclear. Additionally, the adoption of SWPBIS may help partially explain elevated baseline rates of behavior-specific praise (seen in baseline data for Participant 4, see Figure 1) that could ultimately limit potential for improvement (Kratochwill et al., 2010; Shadish et al., 2002). The influence of other unknown variables or simultaneous events is also important to consider (Shadish et al., 2002).

The possibility of conflicting interest/dual relationships was openly discussed with the school program's administration and participants throughout the selection and informed consent process. Support for this study and the student investigator was garnered in that the feasibility of professional development with other external sources, as discussed by Guskey and Yoon (2009), was impacted by time and financial barriers for this school program. The presence of these barriers suggests that schools might consider utilizing existing internal support personnel for professional development and additional educator support/training (Guskey & Yoon, 2009). However, this understandably increased the likelihood of reactive experimental conditions and the possible impact of researcher and participant bias and expectancies. This is important to note when considering this study's validity given that the researcher embodied multiple roles: support personnel, study observer, and implementer of the intervention. This threat to internal validity may have been partially addressed through preserving the second observer's objectivity; the second observer was kept blind to the timing of phase changes,

occurrence of VSM intervention sessions, and the order in which participants received the intervention.

Time limitations and participant availability impacted the consistency and extent of this study's data collection schedule. Allowance for stability in baseline data, defined as the absence of a trend in the direction of the expected change and lack of extreme variability around the mean (Horner et al., 2005; Kazdin, 2011), was limited at times by participant availability which directly impacted the scheduling of intervention sessions. The order in which participants received the intervention included analysis of baseline data for stability and sufficiency (Kazdin, 2011), was also partially impacted by participant availability.

As discussed earlier and similar to the study conducted by Hawkins and Heflin (2011), the type of instructional activity may have influenced the frequency of behavior-specific praise statements, non-specific praise statements, and reprimands (and verbal feedback given in general) as certain school activities may not have provided sufficient or appropriate opportunity for teacher-student interaction. One participant mentioned this limitation during a post-study debriefing session, indicating that there were certain activities (such as student viewing of an educational video) in which teacher-student interaction would have interrupted the lesson and would have been counterintuitive to the instructional goal. Additionally, although Riley-Tillman and Burns (2009) recommended observations should occur during similar activities to ensure the most possible similarity in relevant features (including selection of participants that are as similar as possible), study procedures, scheduling and time allotment did not allow for this during this study. Conversely, controlling for extraneous variables by selection of participants from the

same setting increases the risk for contamination of treatment, or communication between participants about their experience with the intervention and/or study procedures, which was likely during this study as participants were working within close quarters and had interpersonal communication about the study (Riley-Tillman & Burns, 2009). During the post-study debriefing, Participant 4 specifically and spontaneously shared that she had communicated with another participant about the study in anticipation of finding out when it would be her “turn” to view her videos. This, along with participant awareness of the purpose of the study (because deception was not used in this study’s methodology), may help partially explain the increasing trend seen in Participant 4’s data during the changing phases of the other three participants.

Another consideration is the need for intervention, particularly with Participant 4. The baseline data for this participant did not appear to indicate a pattern of behavior in need of change and such finding might suggest that the effectiveness of the intervention is therefore irrelevant (Kratochwill et al., 2010). However, the goal of this multiple baseline study was to explore the utility of VSM and possible effects via replication across participants, therefore consideration of the possible individual effect is restricted. Replications are recommended to investigate the utility of this intervention for individual participants and whether this intervention may be helpful in situations where additional improvement is sought or stability of functioning is desired regardless of baseline skill.

Although replication of effect can be examined through visual and data analysis across the staggered the introduction of VSM across participants, the effectiveness of the intervention for individual participants cannot be determined; further empirical investigation of replication of effect within participants is necessary. When considering

study design through the lens of single-case research design as applied to individual participants, this study employed an ABA with follow-up design (Riley-Tillman & Burns, 2009). Analysis of an ABA design as applied to individual participants cannot confirm intervention effectiveness for those particular individuals; replication through an ABAB design (which involves re-introduction of treatment or the intervention after withdrawal) is still necessary for examination of experimental control at the individual subject level (Riley-Tillman & Burns, 2009). In regards to this study, the ABA design may indicate that, at the individual participant level, a change in the data has occurred and may indicate the specific nature of that change (e.g. level, trend, or variability) without specification of what caused observed changes (Riley-Tillman & Burns, 2009).

In addition to the possibility of some inconveniences associated with participation in research studies, a specific limitation of VSM is understood as the possibility of discomfort experienced by some participants when they are being filmed or when they are viewing video footage of themselves which may have influenced participant perception of study procedures (Buggey, 2007; Hawkins & Heflin, 2011).

Although further replications of the current study and additional empirical evaluation of the effects of video self-modeling as an educator support tool are still needed, results may contribute to the growing exploration of the applications of VSM with adults.

## **Implications**

Implications and recommendations are presented for future research and practice. Implications include study design, measurement, student behavior function and outcomes, and VSM intervention applications, including procedures, use, and training.



**Implications for research.** While results of this study were inconclusive, the overall outcome is sufficiently encouraging to support the continuation of empirical efforts to explore the application and development of video self-modeling to address a variety of adulthood issues (Benzies et al., 2013). Continued research and expansion of VSM's application to different challenges and difficulties experienced by adults, including adults without disabilities, is therefore recommended.

Recommendations for future research specific to VSM and behavior-specific praise use by educators include initial assessment of need and screening of participants as well as the exploration of different intervention dosages, such as more periodic viewing or booster sessions. The use of a universal screening procedure and inclusion criteria for selection of intervention recipients would help ensure that there is a need to intervene with particular participants and the use of such a screening procedure aligns with MTSS framework (Kratochwill et al., 2010; Simonsen et al., 2014). The use of a multiple baseline ABAB design with follow-up on a regularly scheduled basis (e.g. monthly) may allow for assertions about functional dependence between VSM and BSPS across and within participants.

Additional improvements in measurement and data collection, including variable definitions and ratio comparisons, are recommended. Consideration of including additional modalities that represent positive interaction between educators and students within the dependent variable definitions may be beneficial, specifically physical exchanges noted in token economies where no verbal exchange takes place between staff and student(s). Such token-giving non-verbal behavior still communicates affirmation and could be considered a form of praise. Comparison of praise statements to behavior

corrections (as opposed to reprimands) and inclusion of data collection of praise-to-correction ratios in a future study examining VSM may also be beneficial.

As considerable research has been conducted to support the positive impact of behavior-specific praise on student behavior (Austin & Soeda, 2008; Fullerton et al., 2009; Gable et al., 2009; Reinke et al., 2007; Sutherland & Wehby, 2001; Thompson et al., 2012), this study was not designed to examine the relationship between teachers' use of BSPS and changes in student behavior. However, consideration of student needs and outcomes with attention to initial assessment or screening of the function of student behavior, specifically targeting the function of obtaining adult attention, would support interventions that focus on the utilization and promotion of praise as a function-based data-driven behavioral support strategy (O'Neill, Horner, Albin, Storey, Sprague, & Newton, 1997). Additionally, change in student behavior, specifically student use of praise, is another area of possible exploration. The possibility that teacher use of praise might influence the frequency of student use of praise is supported by the social learning theory (Bandura, 1989) referenced in the development of this study. Examples of student use of praise towards self (ex. "I'm doing awesome."), other students, and the teacher were qualitatively noted during observations but not directly measured.

Lastly, when addressing the need for improved use of effective classroom and behavior management strategies, research supports the importance of a multiple tiered approach toward educator professional development and training, connecting layers of broad and narrow support based on the educators' needs (Simonsen et al., 2014). Recent consideration has been given to this tiered model of teacher training and professional development, with attention to the implementation of components of PBIS, including

behavior-specific praise (Coyne, Kame'enui, & Carnine, 2007; Myers et al., 2011; Thompson et al., 2012). Researchers have suggested that providing tiered training and support to educators, with focus on positive interaction between educators and students, specifically praise and behavior-specific praise, is of great importance (Simonsen et al., 2014). Continued exploration of narrow individualized support strategies, like video self-modeling (VSM), may add to the evidence base for available tools and effective strategies that align with this multitiered system of support (MTSS) framework. However, it is still unclear whether VSM alone is sufficient or insufficient for establishing and maintaining increased behavior-specific praise by educators. As recommended by Simonsen et al. (2014), support for educators likely requires additional screening and support for implementing evidence-based interventions for positive behavior support for students. The attention that has been given to the wide application of VSM and promotion of positive behavior support through MTSS training and support for teachers might support a study targeting teacher behavior through VSM across multiple tiers and levels of support.

**Implications for practice.** To facilitate future use of VSM in practice, recommendations include procedural considerations, practitioner training, and adaptation and integration into professional development, consultation, and support strategies, such as those applied through a multitiered system of support (MTSS) (Simonsen et al., 2014).

A specific procedural recommendation resulting from the implementation of this current study is that consideration be given to the use of subtitles when presenting video vignettes to address the possibility of challenges encountered when the voice volume of

participants changes as well as the possibility of recording competing noise in the environment.

Additionally, the training of practitioners (ex. school-based supervisors, school psychologists, or other support personnel), and further study with these professionals as implementers of video self-modeling, could support the use of VSM as an evidence-based intervention and professional support tool in the schools and other workplaces that have access to the technology to implement this intervention (Bray & Kehle, 2012). Exploring the adaptation and integration of VSM into professional training and intervention models, perhaps in supervisory or consultation models, may be beneficial.

While the advantages of VSM are promoted as involving low levels of intrusiveness, as well as time and cost effectiveness (Buggey, 2012), it is recommended that prospective implementers of this intervention analyze the cost-benefit options, or benefit-to-effort ratio (Dowrick, 1999), in the context(s) in which future applications of VSM are being considered for supporting the behavior of adults, whether for the training of educators or other professionals. As noted, the process and ease of video editing has been facilitated by advances in technology, which has created a more user-friendly and less time-consuming experience (Buggey & Ogle, 2012), however, the creation of video vignettes for this study still required a minimum of approximately two to five minutes of computer-based editing time for every one minute of raw footage. As such, the training of practitioners in the use of VSM should consider the resources (time, technology skill, on-going training opportunities, etc.) available to these practitioners (Bellini & McConnell, 2010; Collier-Meek, Fallon, Johnson, Sanetti, & Delcampo, 2012).

The availability of resources should also be considered in relation to the degree of need for change or need for intervention (i.e. Has the behavior not responded to broader support strategies, such as those applied through a multitiered system of support (MTSS) framework?), the desired magnitude of behavior change (How much change is needed?), and the subsequent influence of the possible behavior change on the VSM recipient's functioning and the functioning of those who are impacted by the VSM recipient's behavior (How important and relevant is the possible behavior change? How many people are affected?) (Simonsen et al., 2014). An appropriate benefit-to-effort-and-cost analysis might yield justification for the integration of video self-modeling with adults in additional settings and circumstances with different target behaviors when these questions are considered (Dowrick, 1999). Additionally, as a greater likelihood of improvement has been empirically demonstrated if the behavior or skill in question has not yet been demonstrated, Dowrick (1999) recommend VSM use with individuals who are not demonstrating the target behavior or skill, whether this is due to a lack of understanding of how to perform the skill or whether they have difficulty envisioning themselves performing the skill.

## **Conclusion**

The results of this study suggest the effect of video self-modeling (VSM) on participants' use of behavior-specific praise was inconclusive. Examination of features of visual analysis in conjunction with effect size calculations and study limitations suggested equivocal changes in the data at intervention and follow-up. While this study met internal validity criteria from What Works Clearinghouse (WWC) design standards as a study meeting standards with reservations, the overall results of this study did not

appear to meet WWC evidence standards to allow for conclusive interpretations of effect size or intervention effectiveness. While the possible effectiveness of video self-modeling in this study is unclear, factors such as awareness, relevancy, and self-efficacy are considered in conjunction with participant feedback that suggested an overall positive response and acceptability of video self-modeling, and agreement with the importance and promotion of the use of behavior-specific praise. Explanations for lack of significant changes include opportunities for participants to provide praise to their students, participant perceptions about the need for change, individual participant factors such as personal factors, complexity of behavior change, and personal philosophy, and consideration of other unknown variables and study limitations (Bear, 2013, Hawkins & Heflin, 2011). The results in this study cannot be generalized to all teachers due to the small sample size, limiting generalizability without further replications (Cohen, 1994; Buggey, 2012; Gast, 2010; Kazdin, 2011). Further replications and empirical study with adult participants, participants in similar settings, as well as additional settings servicing a range of student populations, may add clarity to interpretations about the impact of video self-modeling on this specific behavior (Riley-Tillman & Burns, 2009).

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**Table 1**

**Demographic Profile for Participating School**

Total Number of Classroom Teachers	6
Total Number of Classroom Support Staff	12
Grade Level of Students Served	4-12
Total Number of Students	39
Ethnically Diverse Students	9 (23%)
Students Receiving Special Education Services	39 (100%)
Students Eligible for Free or Reduced Lunch	29 (74%)

**Table 2**

**Classroom Characteristics Participating Teachers**

	Participant 1	Participant 2	Participant 3	Participant 4
Total Students	6	5	7	7
Classroom Staff-to-Student Ratio	3:6	3:5	3:7	3:7
Range of Student Grade Levels	4-7	9-11	9-12	7-8

**Table 3****Phase Data Points by Observer and Percentage of IOA Observations Across Study**

	Pre-Baseline	Baseline	Intervention	Maintenance	Follow-Up	Total <sup>a</sup>	Total <sup>b</sup>
<i>Participant 1</i>							
Observer 1 Only	0	4	2	2	2	10	10
Observer 2 Only	0	1	0	1	0	2	2
IOA Observations	4 (100%)	1 (17%)	2 (50%)	1 (25%)	1 (33.3%)	9 (43%)	5 (29%)
Total Observations	4	6	4	4	3	21	17
<i>Participant 2</i>							
Observer 1 Only	0	5	5	2	2	14	14
Observer 2 Only	0	1	1	1	0	3	3
IOA Observations	4(100%)	3 (33%)	1 (14%)	1 (25%)	1 (33.3%)	10 (37%)	6 (26%)
Total Observations	4	9	7	4	3	27	23
<i>Participant 3</i>							
Observer 1 Only	0	8	3	2	2	15	15
Observer 2 Only	0	2	0	1	0	3	3
IOA Observations	4 (100%)	2 (17%)	1 (25%)	1 (25%)	1 (33.3%)	9 (33.3%)	5 (22%)
Total Observations	4	12	4	4	3	27	23
<i>Participant 4</i>							
Observer 1 Only	0	13	2	4	2	21	21
Observer 2 Only	0	2	1	0	0	3	3
IOA Observations	4 (100%)	3 (17%)	1 (25%)	0 (0%)	1 (33.3%)	9 (27%)	5 (17%)
Total Observations	4	18	4	4	3	33	29
	Pre-Baseline Totals	Baseline Totals	Intervention Totals	Maintenance Totals	Follow-Up Totals	Study Totals <sup>a</sup>	Study Totals <sup>b</sup>
Observer 1 Only	0	30	12	10	8	60	60
Observer 2 Only	0	6	2	3	0	11	11
IOA Observations	16 (100%)	9 (20%)	5 (26%)	3 (19%)	4 (33.3%)	37 (34%)	21 (23%)
Total Observations	16	45	19	16	12	108	92

<sup>a</sup>including pre-baseline data<sup>b</sup>excluding pre-baseline data

**Table 4****Interobserver Agreement Across Study**

	Total Count IOA <sup>a</sup>		Mean Count IOA <sup>b</sup>	
	Pre-Baseline	All Other Phases*	Pre-Baseline	All Other Phases*
BSPS	99.40 %	99.11 %	98.97 %	99.32 %
NSPS	98.37 %	98.92 %	95.79 %	99.20 %
Reprimands	100.00 %	100.00 %	100.00 %	100.00 %
Total	99.65 %	99.03 %	98.25 %	99.51 %

<sup>a</sup>Total Count IOA: [(smaller total #) / (larger total #)] multiplied by 100)

<sup>b</sup>Mean Count IOA: [(sum of all ratios) / (# of observations)] multiplied by 100)

\*Includes Baseline, Intervention, Maintenance and Follow-Up Phases

**Table 5****Change in Behavior-Specific Praise Statement (BSPS) Data Across Phases**

	Baseline	Intervention	Maintenance	Follow-Up
<i>Participant 1</i>				
Level (Mean)	13.83	32.25	21.13	15.33
Change in Level from Baseline		133% Increase	53% Increase	11% Increase
Consistency (SD)	8.13	0.96	6.41	2.52
Change in Consistency from Baseline		More Consistent	More Consistent	More Consistent
Variability (Range)	1-22	31-33	13-26	13-18
Change in Variability from Baseline		Less Variability	Less Variability	Less Variability
Trend	Slight Decrease	Stable	Decreasing	Slight Increase
<i>Participant 2</i>				
Level (Mean)	1.56	2.86	3.50	2.00
Change in Level from Baseline		83% Increase	124% Increase	28% Increase
Consistency (SD)	1.88	2.48	1.00	1.73
Change in Consistency from Baseline		Less Consistent	More Consistent	More Consistent
Variability (Range)	0-5	0-7	3-5	1-4
Change in Variability from Baseline		More Variability	Less Variability	Less Variability
Trend	Decreasing	Stable	Increasing	Slight Increase
<i>Participant 3</i>				
Level (Mean)	6.42	9.50	13.00	8.33
Change in Level from Baseline		48% Increase	103% Increase	30% Increase
Consistency (SD)	4.14	4.43	6.93	2.52
Change in Consistency from Baseline		Less Consistent	Less Consistent	More Consistent
Variability (Range)	1-15	3-13	7-23	6-11
Change in Variability from Baseline		Less Variability	More Variability	Less Variability
Trend	Decreasing	Decreasing	Increasing	Slight Decrease
<i>Participant 4</i>				
Level (Mean)	12.72	21.75	14.25	12.33
Change in Level from Baseline		71% Increase	12% Increase	3% Decrease
Consistency (SD)	4.30	8.46	2.63	4.04
Change in Consistency from Baseline		Less Consistent	More Consistent	More Consistent
Variability (Range)	6-20	13-32	12-17	10-17
Change in Variability from Baseline		More Variability	Less Variability	Less Variability
Trend	Slight Increase	Increasing	Slight Increase	Decreasing

**Table 6****Effect Sizes for *Behavior-Specific Praise Statements (BSPS)***

Intervention Compared to Baseline				Follow-Up Compared to Baseline		
	Value	Qualitative Descriptor	Direction Of Effect	Value	Qualitative Descriptor	Direction Of Effect
<i>Participant 1</i>						
SMD <sup>a</sup>	2.27	Large Effect	Positive	0.18	No Effect	None
PND <sup>b</sup>	100%	Highly Effective	Positive	0.00%	Unreliable Treatment	None
IRD <sup>c</sup>	1.00	Large to very large effects	Positive	-0.33	Questionable and Very Small Effects	Decline below baseline
<i>Participant 2</i>						
SMD	0.69	Medium Effect	Positive	0.23	Small Effect	Positive
PND	14.0%	Unreliable Treatment	Positive	0.00%	Unreliable Treatment	None
IRD	-0.86	Questionable and Very Small Effects	Decline below baseline	-0.11	Questionable and Very Small Effects	Decline below baseline
<i>Participant 3</i>						
SMD	0.74	Medium Effect	Positive	0.46	Small Effect	Positive
PND	0.00%	Unreliable Treatment	None	0.00%	Unreliable Treatment	None
IRD	-0.92	Questionable and Very Small Effects	Decline below baseline	-0.08	Questionable and Very Small Effects	Decline below baseline
<i>Participant 4</i>						
SMD	2.10	Large Effect	Positive	-0.09	No Effect	None
PND	50.0%	Questionable Effectiveness	Positive	0.00%	Unreliable Treatment	None
IRD	0.00	Questionable and Very Small Effects	None	-0.22	Questionable and Very Small Effects	Decline below baseline

<sup>a</sup>Standard Mean Difference (SMD): Small = .20-.49, Medium = .50-.79, Large = .80+

<sup>b</sup>Percent of Nonoverlapping Data (PND): < 50% Unreliable Treatment; 50-70% Questionable Effectiveness; 70-90% Fairly Effective; > 90% Highly Effective

<sup>c</sup>Improvement Rate Difference (IRD).50 and below represents questionable and very small effects, .50 to .70 represents moderate effects, and .70 or higher represents large to very large effects. Negative score indicates decline below baseline levels.

**Table 7****Change in *Non-Specific Praise Statement (NSPS)* Data Across Phases**

	Baseline	Intervention	Maintenance	Follow-Up
<i>Participant 1</i>				
Level (Mean)	4.50	7.63	6.63	5.67
Change in Level from Baseline		70% Increase	47% Increase	26% Increase
Consistency (SD)	2.22	4.17	3.68	5.13
Change in Consistency from Baseline		Less Consistent	Less Consistent	Less Consistent
Variability (Range)	1-8	3-12.50 *	3-10.5 *	0-7
Change in Variability from Baseline		More Variability	More Variability	No Change
Trend	Decreasing	Stable	Stable	Slight Increase
<i>Participant 2</i>				
Level (Mean)	4.11	3.43	3.25	3.67
Change in Level from Baseline		17% Decrease	21% Decrease	11% Decrease
Consistency (SD)	2.13	1.81	0.96	3.06
Change in Consistency from Baseline		More Consistent	More Consistent	Less Consistent
Variability (Range)	2-9	1-6	2-4	1-9
Change in Variability from Baseline		Less Variability	Less Variability	More Variability
Trend	Stable	Stable	Slight Increase	Increasing
<i>Participant 3</i>				
Level (Mean)	5.00	5.50	4.75	12.33
Change in Level from Baseline		10% Increase	5% Decrease	147% Increase
Consistency (SD)	3.46	1.73	2.22	11.02
Change in Consistency from Baseline		More Consistent	More Consistent	Less Consistent
Variability (Range)	0-11	4-7	3-8	5-25
Change in Variability from Baseline		Less Variability	Less Variability	More Variability
Trend	Slight Decrease	Decreasing	Increasing	Decreasing
<i>Participant 4</i>				
Level (Mean)	15.11	15.75	19.00	17.67
Change in Level from Baseline		4% Increase	26% Increase	17% Increase
Consistency (SD)	6.08	3.50	6.48	7.09
Change in Consistency from Baseline		More Consistent	Less Consistent	Less Consistent
Variability (Range)	6-27	12-20	12-27	10-24
Change in Variability from Baseline		Less Variability	Less Variability	Less Variability
Trend	Slight Increase	Increasing	Decreasing	Decreasing

\* IOA difference in frequency count for upper limit of range (mean of data points of both observers utilized)



**Table 8**  
**Change in *Reprimand* Data Across Phases**

	Baseline	Intervention	Maintenance	Follow-Up
<i>Participant 1</i>				
Level (Mean)	0.00	0.00	0.00	0.00
Change in Level from Baseline		0% Change	0% Change	0% Change
Consistency (SD)	0.00	0.00	0.00	0.00
Change in Consistency from Baseline		No Change	No Change	No Change
Variability (Range)	0-0	0-0	0-0	0-0
Change in Variability from Baseline		No Change	No Change	No Change
Trend	Stable	Stable	Stable	Stable
<i>Participant 2</i>				
Level (Mean)	0.11	0.14	0.25	0.00
Change in Level from Baseline		27% Increase	127% Increase	100% Decrease
Consistency (SD)	0.31	0.38	0.50	0.00
Change in Consistency from Baseline		Less Consistent	Less Consistent	More Consistent
Variability (Range)	0-1	0-1	0-1	0-0
Change in Variability from Baseline		No Change	No Change	Less Variability
Trend	Stable	Stable	Stable	Stable
<i>Participant 3</i>				
Level (Mean)	0.00	0.00	0.00	0.00
Change in Level from Baseline		0% Change	0% Change	0% Change
Consistency (SD)	0.00	0.00	0.00	0.00
Change in Consistency from Baseline		No Change	No Change	No Change
Variability (Range)	0-0	0-0	0-0	0-0
Change in Variability from Baseline		No Change	No Change	No Change
Trend	Stable	Stable	Stable	Stable
<i>Participant 4</i>				
Level (Mean)	0.11	0.00	2.25	1.33
Change in Level from Baseline		100% Decrease	1945% Increase	1109% Increase
Consistency (SD)	0.32	0.00	1.50	1.15
Change in Consistency from Baseline		More Consistent	Less Consistent	Less Consistent
Variability (Range)	0-1	0-0	1-4	0-2
Change in Variability from Baseline		Less Variability	More Variability	More Variability
Trend	Stable	Stable	Slight Increase	Slight Increase

**Table 9****Data Characteristics and Effect Sizes from Baseline to Intervention for All Dependent Variables Across Participants**

	Baseline			Intervention			SMD <sup>a</sup>	PND <sup>b</sup>	IRD <sup>c</sup>
	M	(SD)	Range	M	(SD)	Range			
<i>Participant 1</i>									
BSPS	13.83	(8.13)	1-22	32.25	(0.96)	31-33	2.27	100.0%	1.00
NSPS	4.50	(2.22)	1-8	7.63	(4.17)	3-12.50*	1.41	50.0%	-0.50
Reprimands†	0.00	(0.00)	0-0	0.00	(0.00)	0-0	0.00	0.0%	-1.00
<i>Participant 2</i>									
BSPS	1.56	(1.88)	0-5	2.86	(2.48)	0-7	0.69	14.0%	-0.86
NSPS	4.11	(2.13)	2-9	3.43	(1.81)	1-6	-0.32	0.0%	-1.00
Reprimands†	0.11	(0.31)	0-1	0.14	(0.38)	0-1	0.10	0.0%	-1.00
<i>Participant 3</i>									
BSPS	6.42	(4.14)	1-15	9.50	(4.43)	3-13	0.74	0.0%	-0.92
NSPS	5.00	(3.46)	0-11	5.50	(1.73)	4-7	0.14	0.0%	-0.67
Reprimands†	0.00	(0.00)	0-0	0.00	(0.00)	0-0	0.00	0.0%	-1.00
<i>Participant 4</i>									
BSPS	12.72	(4.30)	6-20	21.75	(8.46)	13-32	2.10	50.0%	0.00
NSPS	15.11	(6.80)	6-27	15.75	(3.50)	12-20	0.09	0.0%	-0.61
Reprimands†	0.11	(0.32)	0-1	0.00	(0.00)	0-0	-0.34	0.0%	-1.00

\* IOA difference in frequency count for upper limit of range (mean of data points of both observers utilized)

† For Reprimands: no increase in mean and negative effect sizes (when frequency was present) was desirable

<sup>a</sup>Standard Mean Difference (SMD): Small = .20-.49, Medium = .50-.79, Large = .80+

<sup>b</sup>Percent of Nonoverlapping Data (PND): < 50% Unreliable Treatment; 50-70% Questionable Effectiveness; 70-90% Fairly Effective; > 90% Highly Effective

<sup>c</sup>Improvement Rate Difference (IRD).50 and below represents questionable and very small effects, .50 to .70 represents moderate effects, and .70 or higher represents large to very large effects. Negative score indicates decline below baseline levels.

**Table 10**

**Summary of Dependent Variables: Comparing Frequency Data from Baseline to Intervention**

	Level <sup>a</sup>	Standard Mean Difference <sup>b</sup>	Immediacy <sup>c</sup>	Consistency <sup>d</sup>	Overlap <sup>e</sup>	Trend <sup>f</sup>
<i>Participant 1</i>						
BSPS	Increase	Large, positive	Increase	Improved	Highly Effective	Moderate decr. trend to slight decr. trend
NSPS	Increase	Large, positive	Increase	Declined	Questionable	Moderate decr. trend to stable trend
Reprimands*	No Change	No Change	No Change	No Change	N/A†	Stable trend to stable trend
<i>Participant 2</i>						
BSPS	Increase	Medium, positive	Increase	Declined	Unreliable	Moderate decr. trend to stable trend
NSPS	Decrease	Small, negative	Increase	Improved	Unreliable	Stable trend to stable trend
Reprimands*	No Change	No Change	No Change	Slight Decline	N/A†	Stable trend to stable trend
<i>Participant 3</i>						
BSPS	Increase	Medium, positive	Increase	Slight Decline	Unreliable	Slight decr. trend to decr. trend
NSPS	Increase	No Change	Increase	Improved	Unreliable	Slight decr. trend to decr. trend
Reprimands*	No Change	No Change	No Change	No Change	N/A†	Stable trend to stable trend
<i>Participant 4</i>						
BSPS	Increase	Large, positive	Decrease	Declined	Questionable	Moderate incr. trend to incr. trend
NSPS	Increase	No Change	Slight Decrease	Improved	Unreliable	Moderate incr. trend to incr. trend
Reprimands*	No Change	Small, negative	No Change	Improved	N/A†	Stable trend to stable trend
<sup>a</sup> For Reprimands: no increase in level and negative effect sizes (when frequency was present) are desirable <sup>a</sup> Level: Increase, Decrease, or No Change in Mean <sup>b</sup> Standard Mean Difference: Using criteria: Small = .20-.49, Medium = .50-.79, Large = .80+ <sup>c</sup> Immediacy: Increase, Decrease, or No Change between mean of final 3 baseline data points & mean of first 3 intervention data points <sup>d</sup> Consistency: Improved, Declined, or No Change (using standard deviation as criterion) <sup>e</sup> Overlap: Using PND criteria -- PND < 50% Unreliable Treatment; PND 50-70% Questionable Effectiveness; PND 70-90% Fairly Effective; PND > 90% Highly Effective <sup>f</sup> Trend: rate of change in the data set utilizing the split-middle technique <sup>†</sup> N/A: full overlap of data at zero or low frequencies						

Table format adapted from Jaffery (2013)

**Table 11****Participant Responses to *Social Validity Survey***

	1 Strongly disagree	2 Disagree	3 Neither agree Nor disagree	4 Agree	5 Strongly agree
I believe giving behavior-specific praise statements (BSPS) helps the students in my class.	0	0	0	0	4
Specific praise statements improve my interactions with my students.	0	0	0	0	4
I would tell other teachers about BSPS to assist them with student behaviors in their classes.	0	0	0	1	3
Behavior-specific praise statements improve my interactions with my students.	0	0	0	0	4
I would use BSPS with other students in my school when appropriate.	0	0	0	1	3
I will continue to use BSPS in my class in the future.	0	0	0	0	4
I liked participating in the research project.	1	0	0	3	0
I liked working on my praise giving behavior.	0	0	0	2	2
I liked it that another adult was noticing me giving my students BSPS.	0	0	1	3	0
Watching a videotape of me giving BSPS was helpful.	0	0	0	3	1
I enjoyed having two observers in my classroom.	1	1	2	0	0
I would have preferred to keep track of my BSPS rather than have an observer record my praise statements.	1	2	0	0	1
I would like my supervisor to give me BSPS.	0	0	0	3	1
I believe BSPS is useful when working with students.	0	0	0	0	4

Social Validity Survey adapted from Hawkins, S. M., & Heflin L. J. (2011) (see Appendix D)

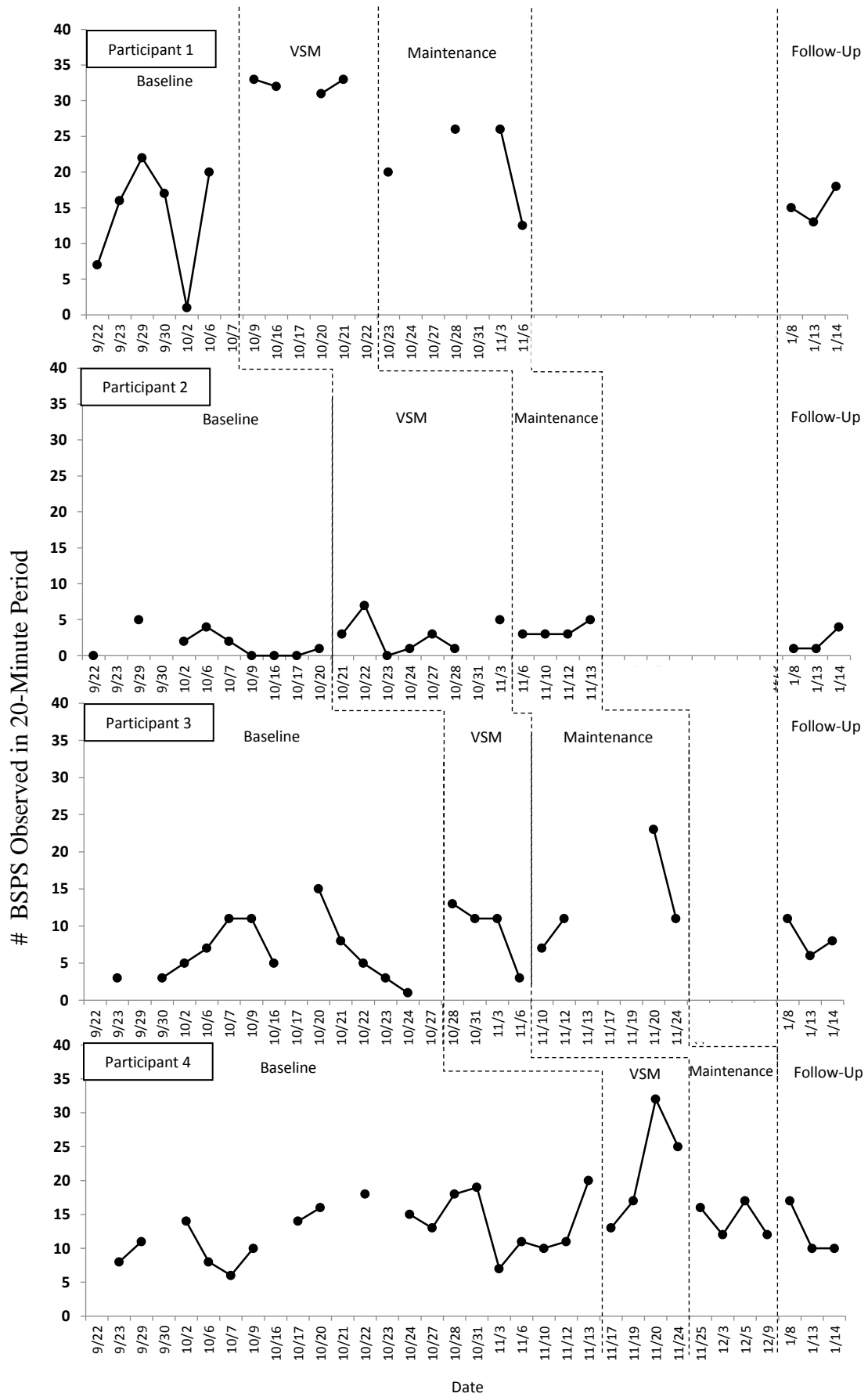


Figure 1. Frequency of BSPS Observed During 20-Minute Observations

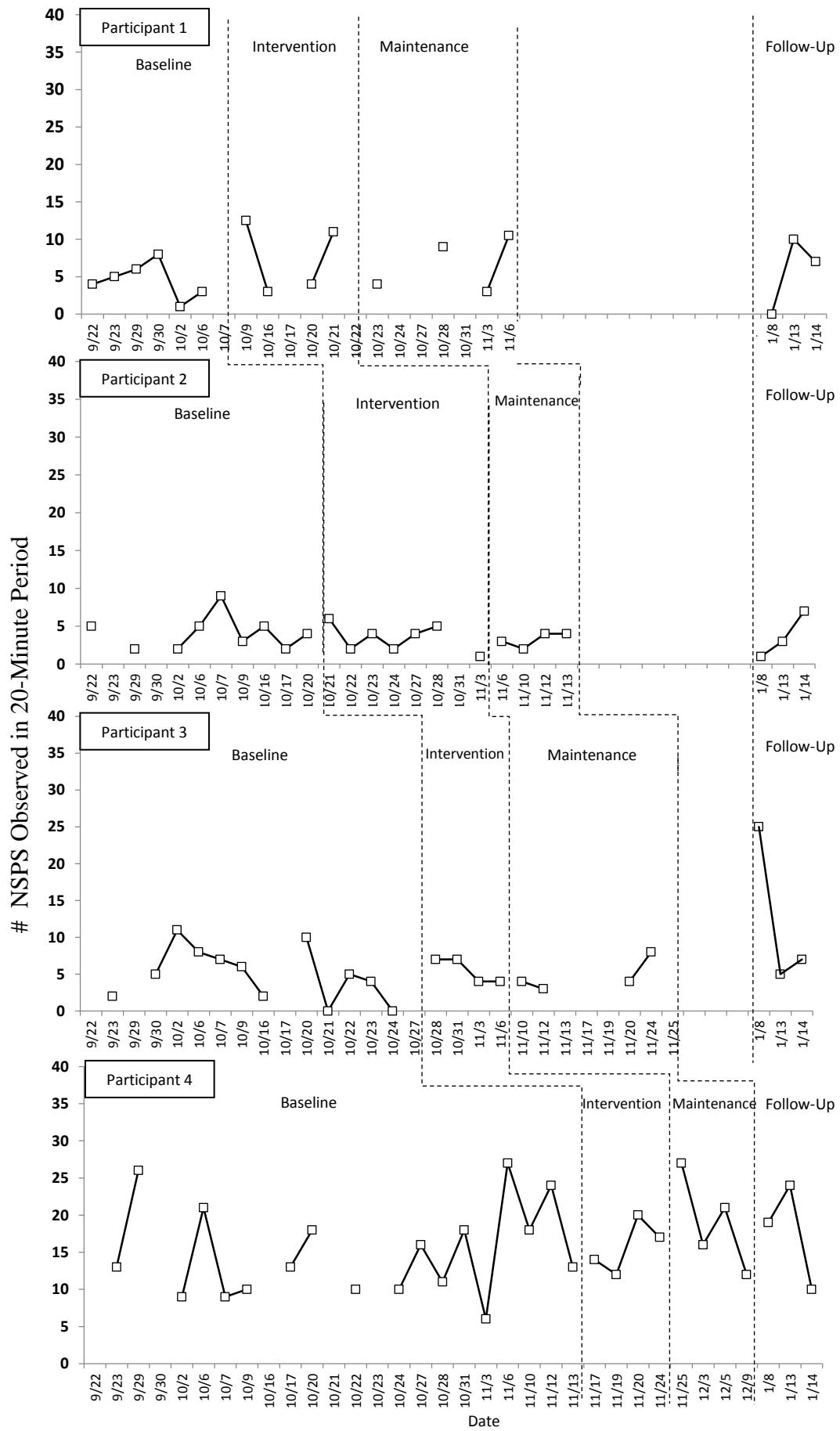


Figure 2. Frequency of NSPS Observed During 20-Minute Observations

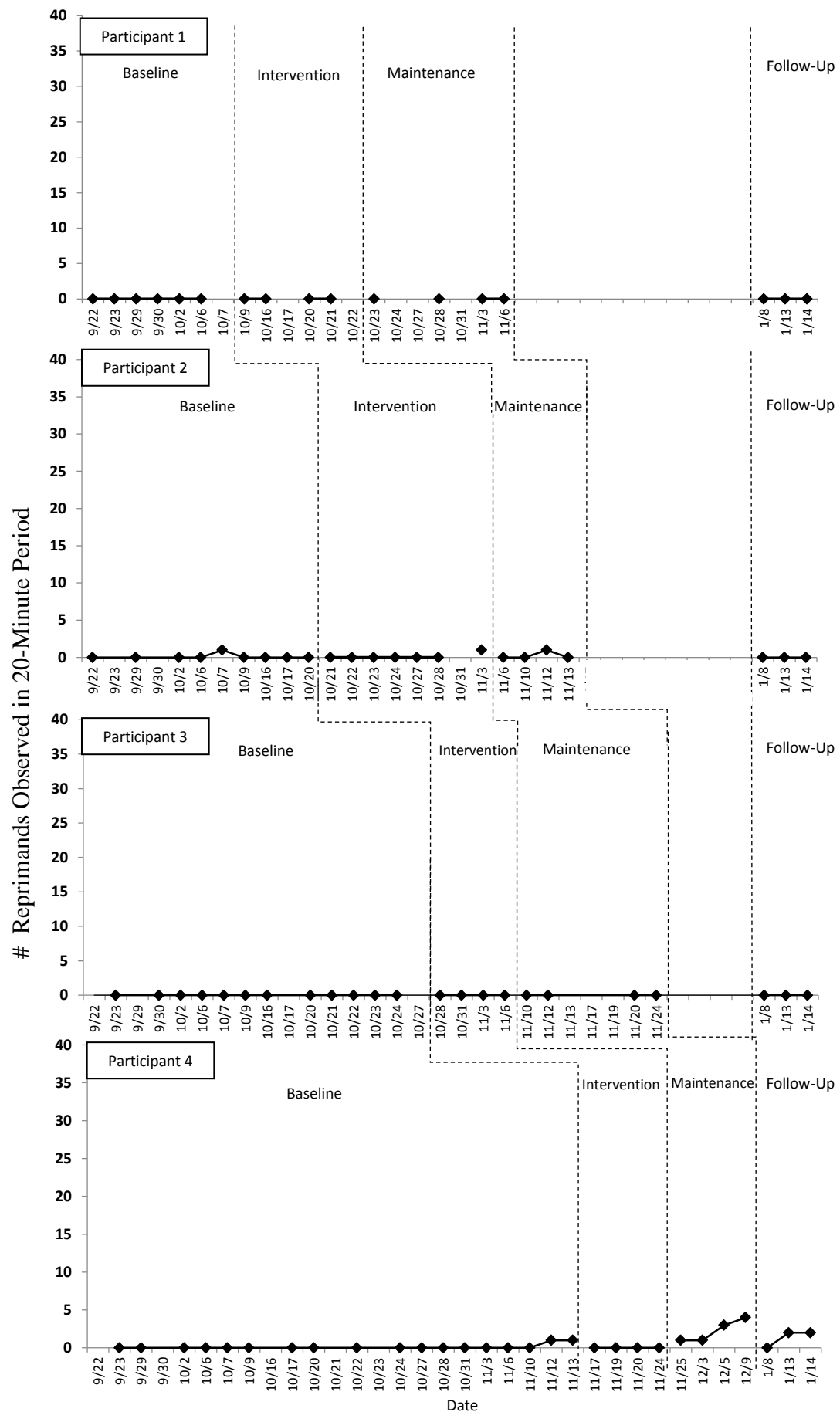


Figure 3. Frequency of Reprimands Observed During 20-Minute Observations

## Appendix A

### Frequency Count Event Recording Form

Instructions (treat this form as confidential):

1. Fill in participant #, your initials for observer, and the Date and Start Time
2. Make a tally mark every time the behavior occurs in appropriate section

Definitions:

- BSPS are given by teacher to student(s) that (1) indicate approval, (2) describe a behavior, and (3) include a praise word. Ex. "Susan, excellent job raising your hand and waiting for me to call on you" and "Thank you for completing this item on your worksheet."
- NSPS are positive statements that **do not** specify a desired student behavior given by teacher to student(s). Ex. "Thank you," and "Good work."
- Reprimands are negative statements given by teacher to student(s). Ex. "I will not tolerate this," and "Stop talking to him." Negative feedback/reprimands **do not** include prompting or behavioral reminders delivered with neutral tone and volume, "You need to line up at the door."

3. Fill in End Time

4. Count tally marks and place total in small square in each section

Participant # _____		Observer: _____		
Date	Start and End Time	# of BSPS	# of NSPS	# of Reprimands
10/2/13	10:05 – 10:15	<div style="display: flex; align-items: center;"> <span>++++  </span> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px; text-align: center; line-height: 20px;">6</div> </div>	<div style="display: flex; align-items: center;"> <span>   </span> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px; text-align: center; line-height: 20px;">3</div> </div>	<div style="display: flex; align-items: center;"> <span>    </span> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px; text-align: center; line-height: 20px;">4</div> </div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>
		<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: 10px;"></div>

Adapted from Hawkins & Heflin (2011) and Thompson et al. (2012)



## Appendix B

### Verbal Script for Researcher Use with Participants During Intervention Phase

---

Overall Session # \_\_\_\_\_

Participant # \_\_\_\_\_ Meeting # \_\_\_\_\_ Date: \_\_\_\_\_

The purpose of this scripted verbal introduction is to ensure that each participant is receiving the same information from the student researcher. Indicate any deviations from this script in the margin; provide any important observations/concerns/questions from the participant on the back of this page

Instructions:

1. Prior to arrival of participant:
  - ☐ have video vignette ready for play on computer screen but in pause position at beginning of clip
  - ☐ Triple-check that the video is the correct video for that participant
  - ☐ Have audio-recorder ready for use
2. Upon participant's arrival
  - ☐ Greet participant
  - ☐ Welcome them to the appointment
  - ☐ Thank them for their participation
  - ☐ Offer participant a seat in appropriate view of screen
3. Remind participant of audio recording
  - ☐ Before turning audio recording on  
"Before we begin, I want to remind you that an audio-recording of this appointment will be necessary to ensure that I am following the appropriate steps for this study. This is strictly for evaluation of me and my interaction with you. The recording will be safeguarded as confidential information. No one but I, the second observer \_\_\_\_\_, and the principal researcher \_\_\_\_\_ will have access to any audio recordings."
  - ☐ Check for participant consent to record  
"Do you agree to allow the use of an audio-recorder to record this session?"
  - ☐ If participant agrees, turn audio-recorder on
  - ☐ If participant disagrees, indicate that you are not turning on audio-recorder but continue with session
4. Begin introduction to video viewing
  - ☐ Thank participant again for their participation  
"I want to thank you again for participating in this portion of the study"
  - ☐ Acknowledge 2- to 7-day wait time  
"Today is \_\_\_\_\_. The last time you viewed a video for the purposes of this study was on \_\_\_\_\_. Is this correct?"
  - ☐ Inform participant of video viewing  
"Today you will be watching a short video of yourself in your classroom."
  - ☐ Remind the participant that feedback cannot be provided  
"I want to remind you that I cannot give you specific feedback. This is to ensure the accuracy of the study. But remember, we can get together at the end of this study and go over any questions you might have. "
  - ☐ Check for participant understanding  
"Do you need any clarification before we get started?"
5. Beginning video viewing
  - ☐ Beginning video on computer screen
6. Conclude session
  - ☐ Thank the participant for viewing the video  
"Thank you for watching the video."
  - ☐ Remind participant of next steps as appropriate  
"Next.....(we will continue with classroom observations, meet again on \_\_\_\_\_)"

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## Appendix C

### Treatment Fidelity Checklist

Participant # \_\_\_\_\_ Session # for this Participant: \_\_\_\_\_ Date of Session: \_\_\_\_\_

Rater (person completing this form): \_\_\_\_\_

	Item	Result (Circle)		Notes/Comments
1	At least two days and not more than seven days had passed since the participant's previous session (not applicable to session #1 with each participant)	Occurred	Did Not Occur	
2	The video vignette presented to the participant (recording of participant's voice in his or her classroom) was approximately two minutes in length	Occurred	Did Not Occur	
3	No feedback of participant performance (no reference made to the quality or quantity of the participant's behavior in his or her classroom) was given by the researcher to the participant	Occurred	Did Not Occur	
4	The researcher thanked the participant for watching his or her video vignette	Occurred	Did Not Occur	
5	The researcher followed the verbal script (any deviations from the script were documented and were in response participant's questions that did not result in the participant receiving feedback about his or her performance)	Occurred	Did Not Occur	
Total points (# of occurrences):			Notes/Comments:	
Total possible points (4 or 5):				
Percent Fidelity:				

Adapted from Rickards-Schlichting et al. (2008)

## Appendix D

### Social Validity Survey

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1. I believe giving behavior-specific praise statements (BSPS) helps the students in my class.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
2. Specific praise statements improve my interactions with my students.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
3. I would tell other teachers about BSPS to assist them with student behaviors in their classes.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
4. Behavior-specific praise statements improve my interactions with my students.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
5. I would use BSPS with other students in my school when appropriate.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
6. I will continue to use BSPS in my class in the future.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
7. I liked participating in the research project.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
8. I liked working on my praise giving behavior.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
9. I liked it that another adult was noticing me giving my students BSPS.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
10. Watching a videotape of me giving BSPS was helpful.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
11. I enjoyed having two observers in my classroom.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
12. I would have preferred to keep track of my BSPS rather than have an observer record my praise statements.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
13. I would like my supervisor to give me BSPS.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
14. I believe BSPS is useful when working with students.	1	2	3	4	5
<i>Strongly disagree</i>		<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>

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Adapted from Hawkins, S. M., & Heflin L. J. (2011)